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A PRESENTATION OF TWO CASES*

1. End Result of Conservative Surgery On a Lone Kidney
2. Renal Tumor Simulating Renal Calculus

BY CHANNING S. SWAN, M.D.†

Mr. President and Members of the New England Urological Society:

I WANT very briefly to present x-rays on two cases, and a specimen on one of the cases.

The first x-ray represents the condition of the only kidney of a patient whose case I presented before this society two years ago. This picture was taken on December 28, 1929, and shows the remaining left kidney to be simply a large hydronephrotic sac.

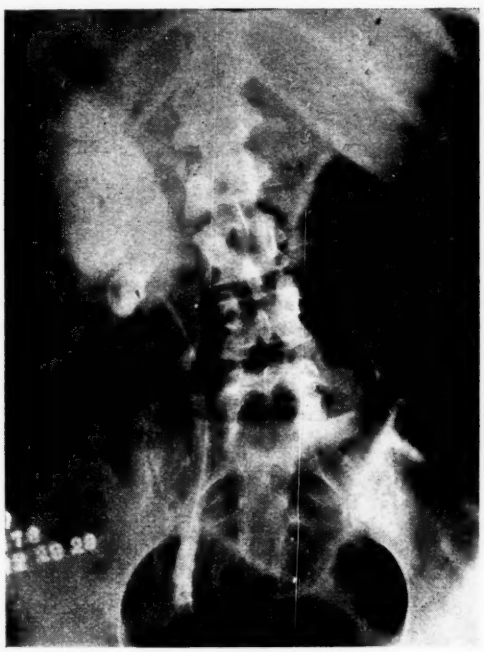

FIGURE 1.

Under local anesthesia I did a nephrostomy on that case and the patient is now comfortable, working, and very well. She has a permanent tube and wears a Watson collecting apparatus. Some time ago she came to me and asked if she could be examined to see if anything could be done about the possibility of closing the permanent fistula. I took her to the hospital and did a pyelogram, which you see here.

I brought this picture to show you what a remarkable recovery this kidney has made in its anatomical outline. You see here the somewhat normal pelvis with definitely well-formed calices.

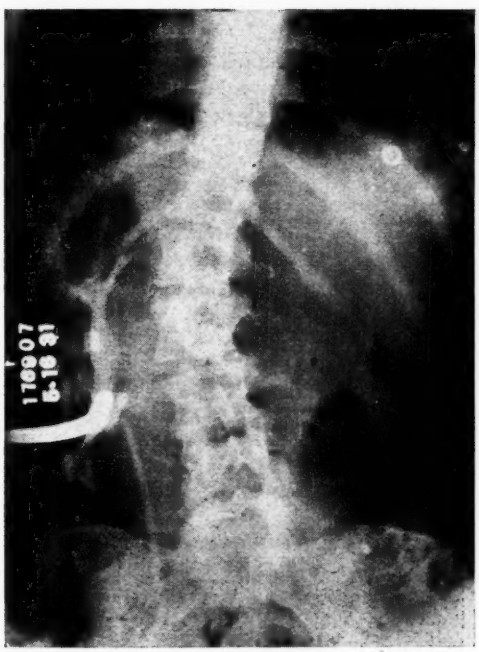

FIGURE 2.

The patient's N.P.N. is normal, she voids naturally about once a week; the rest of the time the urine comes out through the tube. This tube she takes out every night before she goes to bed, cleans it and puts it in again, and attaches to a bottle beside the bed for the night. The chief reason for showing this picture is to show you the tremendous recovery the kidney has made, and suggest that although this procedure was necessary in this case because it was the patient's only kidney, it might be done as

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a conservative measure in other cases instead of a nephrectomy, even when two kidneys are present.

The second case is that of a woman, fifty-two

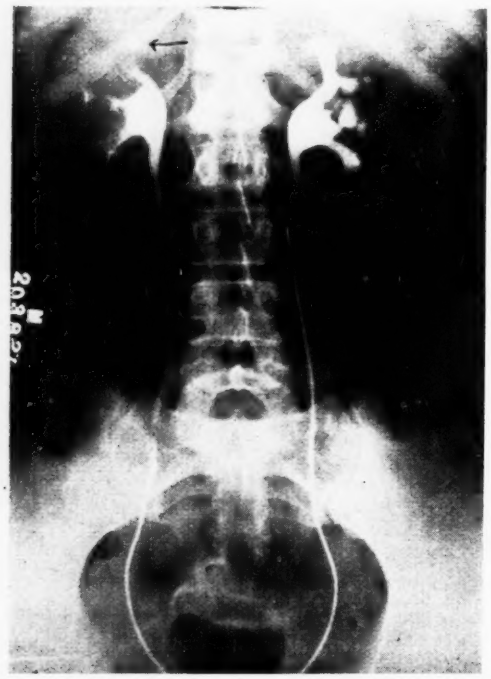

FIG. 3. Arrow points to shadow overlying rib, interpreted in plain plate as a calculus.

years old, who entered the Massachusetts General Hospital in February, 1932, with pain in the left flank and with hematuria. This is one of her x-rays which was interpreted by us and by the x-ray department as showing a renal calculus at the upper pole of the kidney. She was obese and not in very good condition, and as her symptoms were not very acute at that

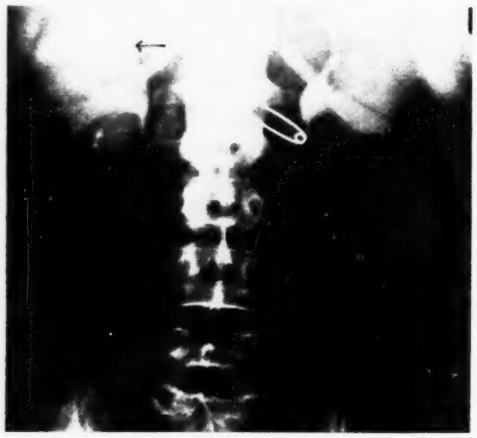

FIG. 4. Arrow points to shadow constant in plain plates and thought to be a calculus.

time we let her go home. Here is the pyelogram.

We admitted that the upper calyx was possibly somewhat blunted and fuzzy but we thought, as did the x-ray department, that it possibly represented a blood clot.

She came back to the hospital last week because the pain had increased in severity and was persistent. Here is the pyelogram taken at this entry, and you will note that the findings are quite similar to those seen in the previous picture. The hollow-appearing filling defect in the pelvis was considered to be a blood clot.

I did a nephrectomy on her yesterday. The kidney is here. I was somewhat surprised to find that she had an epidermoid carcinoma of the upper pole of the kidney which is very extensive and involves almost the entire upper pole. It is surprising, in view of the extensive mass shown in the specimen, that we were all misled in the diagnosis preoperatively.

FIG. 5. Kidney with tumor in upper pole.

Discussion

Dr. Graves: That was a papillary growth of the renal pelvis rather than parenchymal?

Dr. Swan: It was supposed to arise in the renal pelvis.

Dr. Quinby: Epidermoid carcinoma of the kidney is very unusual. They have not had time to tell whether it is epidermoid or not.

The pathological report on this renal tumor was subsequently reported as follows:

"Description: A kidney 12 cm. long and weighing 149 gms. The capsule strips with moderate ease revealing a finely granular surface. Near one pole is a firm coarsely lobulated mass presenting in one spot as a smooth grayish surface. The rest is hemorrhagic.

Section reveals this mass to be 4 x4 x 3 cm. in size, sharply delimited, grayish, finely nodular, and firm, except for one large soft area which projects into and lines a dilated calyx as a papillary mass. The remaining tissue is negative. A portion of adjacent pelvis is dilated.

Diagnosis: Papillary squamous cell carcinoma."

John Bradley, *Pathologist.*

(This type of tumor is sometimes called epidermoid carcinoma by pathologists—C. S. S.)

A STUDY OF RENAL INFARCTION*

BY J. DELLINGER BARNEY, M.D.†

THE following case was referred to me in September, 1931, by Dr. P. J. Look of Andover.

A white widow of 31 gave a history of miscarriages, each at seven months, in 1921, 1923 and 1925. The patient stated that there was albumin in the urine on each occasion but that it always cleared up. Phlebitis of both legs occurred after the last confinement. This has recurred from time to time ever since, first on one side and then on the other. During most of the time the patient has felt otherwise well and has worked as a stenographer. Phlebitis appeared in the left leg to a moderate degree about a month ago. About three weeks ago the patient noticed a dull, persistent pain in the right loin. This gradually increased in intensity until a day or two ago when it became almost unbearable and much morphine was required for its relief. There was no nausea or vomiting at any time, and no chills, but there was slight elevation of temperature. There were no urinary symptoms. Other than the above the patient has always been well.

Examination showed a well-developed and nourished young woman writhing in pain. Heart and lungs were negative. B.P. 150/80. Temperature 102.4°, Pulse 140, Respiration 28. Blood smear not remarkable. White count 22,600; red count about 3,000,000; hemoglobin 50%. Blood nitrogen 40 mgm. Urine showed large trace of albumin, sediment a few whites, many reds.

Abdomen full, the whole right side including the costovertebral angle and from the costal margin to the symphysis exquisitely tender, especially in the upper quadrant. Muscles absolutely rigid and boardlike. Owing to this no mass could be felt but there was a definite impression of a mass in the region of the kidney. Pelvic examination showed no mass but marked tenderness especially in the right vault.

As the picture was confusing Dr. E. L. Young, Jr., was asked to see the patient in consultation. It was a question whether symptoms were due to pathology in or around the kidney, to an acute appendicitis of the retrocecal variety, or to some other acute abdominal condition. It was finally decided that the condition was probably a perinephric abscess and that we could afford to wait for a time for further study and for possible improvement of the patient's condition. Meantime she was made comfortable with morphine and given intravenous glucose solution. An x-ray with a portable machine showed nothing definite to suggest renal or ureteral calculi.

After waiting about 48 hours and no improvement having taken place it was decided to explore the right kidney in the belief that there was either a perinephric abscess or a completely obstructed and acutely infected kidney. During this interval the patient voided from 40 to 50 ounces of urine daily. Cystoscopic study was not attempted as the patient was too ill for this procedure. The operation was done under local novocain anesthesia, the preoperative diagnosis being "perinephric abscess." On exposing the kidney, its surrounding tissues were found to be slightly edematous, and the kidney itself seemed firm, fixed and about half again as large as usual. Careful and quite thorough exploration around the kidney showed no evidence of free pus. The kidney was then partially decapsulated, exposing a dull red, dead-looking cortex. Not only was there no bleeding after stripping the capsule but also a slight tear of the cortex made by the lip of the retractor showed no bleeding whatever. A piece of the cortex was removed for biopsy. A rubber tissue wick was inserted and the wound closed in layers. Postoperative diagnosis "infarct of the kidney." It is fair to say that not once did such a diagnosis even enter my mind or that of Dr. Young. The biopsy specimen examined by Dr. H. F. Hartwell showed acute and complete degeneration of tubules and glomeruli, the picture being comparable to that seen in acute mercurial poisoning.

For some days after the operation the patient improved and was largely relieved of pain. After about a week her temperature again rose and it was apparent that she was not progressing favorably. Meantime an examination of the chest by Dr. C. M. Jones showed collapse of the right lung. Nephrectomy was decided upon and this was performed under gas oxygen anesthesia. The kidney was about the same size as before. Intracapsular nephrectomy was done as it seemed to be the simplest procedure. On cutting across the pedicle no blood whatever escaped from the kidney. The vessels were ligated as usual, but as it turned out afterward neither clamps nor ligatures were necessary. During the process of freeing the kidney a small incision was made through the pleura, but this was immediately closed by suture.

A very complete pathological study of this kidney was made by Dr. Tracy Mallory. Without going into details at this time I shall say only that it showed infarctions of the entire vascular structure of the kidney, both arterial and venous, with complete degeneration of practically all its tubules and glomeruli. The kidney at the time of removal was a dull brick-red color with lighter and darker mottlings and also looked like, as it actually was, dead tissue.

The patient became much distressed after operation on account of dyspnea and rapid respiration. Examination of the right chest showed an extensive pneumothorax. This was aspirated three times during the next twelve hours, about 2500 cc. of air being removed on each occasion, with some relief of respiratory symptoms. After a few days of stormy convalescence the patient developed symptoms of bronchopneumonia and empyema (this being confirmed by x-ray). She died 10 days after operation.

Autopsy showed (I shall give only the items of interest in connection with renal infarction) a normal heart and normal left kidney. The left lung was normal. There was bronchopneumonia on the right side with a large empyema cavity, this being above the lower lobe and entirely walled off from that portion of the pleura immediately above the diaphragm, which was smooth and normal. It would appear, therefore, that the empyema did not result from the accidental opening of the pleura. It may possibly have arisen from the aspirations which were performed. The interesting feature of this autopsy was the extent of thrombosis of the

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blood vessels. This thrombosis involved the vessels of both legs, the iliacs, the vena cava up to the point of entrance into it of the left renal vein. The right ovarian and right renal veins were completely occluded. The vessels of the pelvis were also thrombosed for the most part. As a result of this extensive vascular damage, especially perhaps of the vena cava, the circulation from the lower extremities and of the pelvis was carried on by way of the left ovarian vein which was dilated almost to the size of one's thumb. Not only were the vessels mentioned occluded wholly or almost so by thromboses, but they were of such long standing that they were attached to the lumina of the vessels by strong fibrous bands and were composed of firm fibrous tissue. Canalization had occurred in many places.

In view of these findings I doubt very much if anything could have been done to save the patient.

In addition to this case I wish to report four others found in the autopsy and clinical records of the Massachusetts General Hospital. All were cases of total infarction of the kidney, unilateral in one, bilateral in three. Two occurred in males, two in females. In two there was a marked elevation of pulse and temperature; in two these features were normal. All four had marked pain and tenderness over the kidney affected. Nausea and vomiting occurred in two; the urine was pathological in three, but in only one was there any disturbance of urination, this consisting of gross hematuria. Although the entire kidney was infarcted in three of these, there was no extensive thrombosis of vessels such as was found in the first case reported.

The literature of renal infarction is relatively scanty and incomplete. Textbooks do little more than mention the subject. Clinicians rarely even consider such a condition in a list of possible diagnoses. It was thought, therefore, that a review of the available literature as well as the study of a large series of cases would be of value. Traube[1] is credited with the first report of a case of renal infarction in 1856. From then until 1922 only two or three cases were reported by various writers. A fine article based on the study of 16 cases was published by Aschner[2] in 1922. Falci[3], in 1924, collected and studied 22 cases, to be followed in 1927 by Danhiez[4] with a report of four more cases. All three of these authors have gone very thoroughly into the pathogenesis, pathology and symptomatology of renal infarction.

After all, the study of a large series of cases from autopsy records is perhaps the most valuable. Therefore with the coöperation of my resident, Dr. E. Ross Mintz, I have collected and analyzed a series of 143 cases from the autopsy records of the Massachusetts General Hospital. It is interesting to note that 83% of these were admitted to the medical service. Twenty-two came into the surgical wards with various complaints, such as gangrene of one or both extremities, acute abdominal conditions, cancer, empyema, etc.

In almost all of the cases, whether medical or surgical, there was acute or chronic heart disease with or without decompensation. Marked arteriosclerosis was a prominent finding in almost all. The condition referred to as "malignant endocarditis" was a feature in a large number of these cases.

Although renal infarction seems to affect the two sexes about equally, it may occur at any age. Our youngest case was that of a six year old boy; our oldest a man of 77. In general those between the thirtieth and fiftieth years are most commonly affected.

While in most instances renal infarct produces no temperature, when present it may well be ascribed to the condition giving rise to the infarct. Urinalysis is likewise of no great or frequent importance, for the reason that it may reveal either nothing at all or only a few white or red cells. In only four cases was there a gross hematuria.

The autopsy findings present many interesting features. In the first place the heart, this including myocardium and valves, was recorded as normal in only six of the 143 cases. In 95% there was more or less pathology. This consisted briefly of endocarditis, acute and of the "malignant" or vegetative type in the younger patients, but in some of the adults as well. In the adults, however, it was mostly of the chronic fibrinous type and almost always associated with a marked degree of arteriosclerosis. Sepsis also was a prominent feature in those with the acute type of heart disease.

The spleen and the lungs showed infarcts each in 55% of the cases, the liver in one case, the brain in two.

Both kidneys showed infarcts "small" or "large," "many" or "multiple" in 77 cases. In some there were seen old healed infarcts. In the remaining cases (45.7%) only one side was involved.

A study of the condition of the vascular system interested us especially as we had supposed that the veins would show the most damage. In this we were wrong. The arteries were thrombosed in 69 cases, the veins in 19, and as might be supposed the renal arteries were very frequently thrombosed, 17 times as compared with four times in the case of the renal veins. The apparent discrepancy between these figures and the fact that infarcts of the kidney were found in 143 cases is to be explained by the fact that even though thromboses of the main vessels of the kidney were not demonstrable, involvements of small or perhaps microscopic vessels were accountable for the infarcts observed.

Other vessels than those of the kidney showed thromboses to a marked degree. These were, in order, the common and external iliac arteries

and veins, the femoral vessels, the abdominal aorta and the inferior vena cava. Less frequently thromboses were noted in the mesenteric, splenic, hepatic, axillary, brachial, hypogastric and tibial arteries. The entire portal system was occluded by thrombus in one case. Pulmonary emboli were found in many but are not stressed here.

The matter of blood infection is interesting and important, but as many of these autopsies were done from 10 to 30 years ago we find the records either missing or worthless in many instances. In 55 or 52.3% of the recorded cases organisms were demonstrated in the heart's blood, these being streptococci (mostly viridans) in 72.7%, staphylococci in 18.1%. In 50 other cases or 47.6%, the blood was recorded as sterile. We believe that modern bacteriological methods would change this picture to a greater or less degree.

A study of the personal case first reported, the literature, and a series of 143 autopsy cases warrants the following concluding remarks:

1. Renal infarction occurs in either sex and at almost any age, usually in the adult between the thirtieth and fiftieth year.

2. There may be no clinical symptoms whatever to indicate its presence. Whatever symptoms are noted may be due quite as much to the condition causing the infarction as to the infarction itself. On the other hand, in the event of a total infarction of one or both kidneys, pain and tenderness of definite severity are to be expected.

3. Endocarditis, acute or chronic, generally with extensive arteriosclerosis is to be looked for in the vast majority of these cases. Occasionally, however, infarcts result from chronic or acute sepsis in the presence of a normal heart.

4. Prognosis depends largely upon and is really that of the underlying condition, i.e., endocarditis, arteriosclerosis and sepsis. Generally speaking the patient has a poor chance of recovery.

5. No definite rule can be laid down as to treatment. The infarct which causes no symptoms and which cannot be demonstrated during life will generally take care of itself. Much more important is the treatment of those conditions which favor the formation of infarcts, but, as we all know, these conditions being generally chronic and incurable their treatment is difficult and of little value.

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PERINEPHRITIC ABSCESS IN INFANTS*

BY ROGER C. GRAVES, M.D.,† AND SIDNEY J. SOLOMON, M.D.†

PERINEPHRITIC abscess in infants is by no means unknown, but it is decidedly uncommon and when present, its clinical signs may be most obscure. Because of this obscurity and the resulting difficulties of diagnosis, it seems worth while to record the following two case histories and so call attention to the possibility of perirenal suppuration in these very young patients.

CASE 1. Baby H. L., male, aged 2 years. Malden Hospital No. 33648. The patient was admitted to the medical ward, August 16, 1930, because of fever. One week before, he was found lying on the floor of a house, naked and deserted. Since that time he had been feverish and had cried a great deal especially at night. Family history and past history unobtainable.

Physical examination found a fairly well-developed but poorly nourished male child of two years, lying in bed in a semi-stuporous condition but without apparent pain. Temperature 103.2°; pulse 128; respirations 48. The routine investigation revealed slight evidence of rickets and an apparent enlargement of the heart. The head and chest were otherwise negative, the lungs being clear. The abdomen was prominent with a soft distention. There was tympany throughout. There were no palpable masses or muscle spasm; no tenderness or herniae. Liver edge, spleen, and kidneys were not felt. There were no noteworthy changes in the extremities, and the reflexes were normal. The white blood count was 46,000; red blood count 4,440,000; urine: clear, acid; albumin, negative; sugar, negative. No definite diagnosis made.

On August 22 the record read that the child seemed improved and was taking nourishment well. An x-ray film of the chest showed the heart to be a little enlarged and the lung fields clear. On August 26, however, it was noted that there were signs of a lobar pneumonia in the right chest, and that the patient's condition had become serious. August 29, 13 days after admission, the temperature was 102.2°; pulse 160; respirations 50. Death occurred suddenly that day at 6:00 P. M. The white blood-count done the day before was 105,000, and the urine showed a trace of albumin with pus in the sediment.

Autopsy found a perinephritic abscess upon the right side, which had ruptured into the right pleural cavity. There was collapse of the right lung with early pericarditis by direct extension. There were multiple abscesses in the right kidney. No final opinion was given as to whether these abscesses followed or preceded the perirenal suppuration, but apparently the extension to the chest had taken place during the child's stay in the hospital.

CASE 2. Baby G. M., female, aged 28 months. Admitted January 16, 1931, because of fever, pain in the back, and lameness. Six weeks before, she had

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been seen by a physician but no diagnosis was made. There was fever at that time. She was then taken to an out-patient hospital clinic where admission for observation was advised but refused. No diagnosis was given. On January 13, the child was seen by Dr. Solomon. He found her pale, and walking with a decided limp as though favoring the left leg. There was tenderness and slight fullness in the left lumbar region. The glands in the left groin were swollen. The temperature was 101°. There had been no increased frequency of urination, and no apparent dysuria. The mother reported no serious illness or accident, and no known recent infection. A perinephritic abscess was suspected because of the experience with Case 1, and a urological consultation was requested.

Examination on January 15 showed the child distinctly pale, but fairly well nourished. She walked with a decided limp and seemed disinclined to straighten the left leg. Forced extension of the left thigh caused pain and marked lordosis. There was a normal range of movement in the hip joint. Fullness and tenderness were present in the left lumbar region posteriorly. The rectal temperature was 100.6°. A voided sample of urine was pale, slightly turbid, 1.007, neutral; albumin, faint trace; sugar, negative; sediment, an occasional red blood cell, epithelium, and débris; no pus. X-ray films found no evidence of disease in the bones of the lumbar spine and pelvis. The abdominal field was obscured by intestinal gas, and the kidney outlines could not be seen. There were no shadows of urinary calculi. Hospitalization for further study was recommended, and the patient was admitted on January 16.

The routine physical examination found the changes already described. The tonsils were moderately enlarged and reddened and the tongue was coated and dry. The chest was normal. The abdomen was moderately distended and tympanitic. In the left upper quadrant there was definite resistance to palpation, and a questionable mass. The left lumbar region posteriorly, below the twelfth rib, was slightly full and very tender. The fullness became a little more marked after a few days in the hospital, but the tenderness subsided somewhat and the temperature became normal. The white blood count was 18,000; red blood count 4,130,000; hemoglobin 75%. On January 22, a cystoscopic study was carried out under light ether anesthesia. An infant cystoscope was easily passed and the left ureter was readily catheterized with a No. 4 catheter. There was a moderate drip of clear urine from the left kidney, containing a rare granular cast and three to five leucocytes to the high power field. A No. 4 catheter was then passed along the right ureter, establishing the presence of clear urine upon that side. A left pyelogram was not wholly satisfactory, but suggested a dilated renal pelvis. The right pyelogram, made with four c.c. of solution, proved to be within normal limits in every respect. Palpation of the abdomen, still relaxed from ether, disclosed a small, easily palpable right kidney, while in the left flank a large, firm mass could be felt in the renal region. Operation advised.

Operative Note. January 26, 1931.

Preoperative Diagnosis: Abscess, Perinephritic, Left; Question of Tumor of Kidney, Left.

The patient was placed in the left lateral position. A large-bore needle with syringe attached was introduced into the left costovertebral angle over the swelling which had become quite pronounced in this area. After penetrating the muscle wall, greenish-yellow pus was obtained. A specimen was taken for bacteriological study. A small incision was then made below and parallel to the twelfth rib and penetrating the lumbar fascia just enough to permit the escape from the left renal fossa of a large amount of purulent material. The abscess cavity, so far as it could be palpated with one finger, reached upwards back of the kidney almost to the diaphragm, and downwards toward the pelvis farther than one could reach. No abnormality in the kidney could be palpated, and there was no palpable involvement of bone or peritoneum. A soft rubber catheter was led into the cavity above and below, for thorough irrigation with warm saline solution. Two small cigarette drains were placed, one leading upwards back of the kidney and one downwards into the pelvis. The wound was lightly closed around the drains with two sutures of silkworm gut. The patient left the operating room in good condition.

Report of culture: Hemolytic streptococcus.

Final diagnosis: Abscess, perinephritic, left.

After a very satisfactory convalescence the patient was discharged in good condition on February 13, 1931, the eighteenth postoperative day. She returned for observation on March 29, and the mother reported a very marked improvement. There had been a gain of many pounds in weight, and the child presented the appearance of robust health. The limp on walking had almost disappeared.

Discussion

Dr. Vermooten: I would like to report one patient of mine, a little boy four weeks old, admitted to the New Haven Hospital with a diagnosis of pneumonia on the right side. Examination of the chest indicated the presence of pneumonia and the x-rays confirmed this impression. On abdominal examination, however, although the abdomen was not very markedly distended, one could feel on the right side a very large tumor mass which was taken to be a large liver. On the left side of the abdomen another similar large mass was felt and it was difficult to explain these two abdominal masses, particularly the one on the left, unless one also supposed that there was an enlarged spleen. The patient ran a somewhat septic type of temperature. After about two weeks in the hospital the patient developed signs of empyema on the right side and, as the temperature rose, aspiration of the pleural cavity was done and thick pus obtained. Thoracotomy drainage was done and very shortly afterwards the patient died. At autopsy he was found to have two very large, extensive, perinephritic abscesses which extended from the diaphragm to the pelvis on each side.

Dr. Barney: I was interested in Dr. Graves' case reports. I would like to ask more about the first case. There was a white count of 105,000. Was there any differential examination of the blood made and was there any suspicion whatever of lymphoblastomatous conditions there? A 105,000 white count would fit in with something of that sort and I wonder if this condition might be lymphoblastomatous growth which had broken down and possibly caused the conditions found.

Dr. Graves: Dr. Barney's question is very well raised, of course. I did not see that patient personally, but there was a postmortem examination in which nothing was found apparently to suggest the condition that he mentions.

CARCINOMA OF THE BLADDER ASSOCIATED WITH THE FORMATION OF MUCUS*

BY WILLIAM C. QUINBY, M.D.†

INASMUCH as the significance of the occurrence of mucus in the bladder urine in the absence of infection has received but little or no attention in general urologic knowledge or in textbooks on urinalysis, a report of the following case will be of interest. Mucus, when seen in the absence of bacterial infection, in our experience, has been the result of the presence of an especial type of carcinoma within the bladder. This type of carcinoma arises from embryonic rests and has already been described in a case from this clinic by Dr. Fletcher H. Colby[1]. It is also well-known to accompany cases of exstrophy of the bladder.

The history of the present case is as follows:

A woman of fifty complained in March, 1931 of slight difficulty on urination. This consisted of slowness in the ability to start the stream; together with a slight increase in the frequency of the calls to urinate, especially at night. Together with this there was an uncomfortable sensation preceding urination, this sensation being located at the outlet of the bladder, never sufficiently severe to be called a definite pain. The onset of these difficulties was vaguely related by the patient to a respiratory infection which had shortly preceded them, but at no time was any evidence of infection to be found in the urine.

The patient's past history was as follows: In early youth, because of some pelvic abnormality, a panhysterectomy was performed, together with the removal of both ovaries. She has, therefore, never had any catamenia. Four years later she had her appendix removed, the operation being followed by prompt recovery. In 1918 she had an attack of epilepsy of the major type; another one in 1922 and three following this. In 1921 the urine was said for the first time to be filled with mucus. Recently the patient has been taking regularly luminal and lutein tablets. Except for the difficulties on the part of the bladder she seems to have been in robust health and has been very active.

Physical examination showed an individual of rather masculine type in whom there had never been any development of the breasts and in whom the external genitalia were entirely infantile. Heart, lungs and abdomen were negative. Blood pressure 155/90. On rectal examination, a vaginal examination being impossible, a mass was felt in the region of the floor of the bladder simulating closely a small, infantile uterus. On catheterizing the urethra the catheter passed for at least twice the usual distance before withdrawing urine. There was no evidence of bleeding.

Examination of the interior of the bladder by cystoscope showed a bizarre picture of mucus shreds with areas of increased vascularity, and in the vault of the bladder one or two areas which looked like granulation tissue. Surrounding the outlet of the bladder were seen irregular masses of mucus-bearing tissue, undoubtedly of neoplastic origin.

Operation was performed on the fourteenth of January. The peritoneal cavity was opened and the interior of the pelvis found to be entirely empty except for the bladder and rectum. There was no evidence of any pathology present, however. Investigation of the lymphatics at the bifurcation of the aorta showed no evidence of any lymph node involvement by malignancy. The bladder wall itself showed a moderate degree of hypertrophy, but no evidence, so far as seen, of any extravesical involvement by tumor. The bladder was opened and the tumor at the outlet investigated. It entirely surrounded the lower bladder segment, there being no remains of the trigone to be seen, although each ureteral orifice was above the mass. A small bit of tissue was removed, the pathological report of which was adenocarcinoma of the bladder. Inasmuch as the tissue seemed to be undoubtedly of an embryological, mucus-forming sort, it seemed highly probable that it would be found to be radiosensitive to a degree much greater than other types of bladder neoplasm. The bladder was, therefore, closed around a drainage tube and the patient, after a normal convalescence, was referred to Dr. Barringer at the Memorial Hospital in New York. He again opened the bladder and inserted a number of radium seeds, each of about 1½ millicuries. The tumor at the time had an area of about 6 x 4 cm. Forty seeds were put in the tumor itself as well as in one or two small areas which looked like implants. Convalescence from this operation was rather tedious, but otherwise uneventful, and a month and a half later, that is in April, 1932, the patient returned to me again for cystoscopy.

Examination of the interior of the bladder then showed the entire disappearance of all evidences of tumor, there remaining only a few, white necrotic areas, the result of the radium. The bladder function had returned to practically normal, and her condition was excellent in other respects.

The pathologic report of the tumor which was removed at the first operation is as follows:

Microscopic report:

A section passing directly through the center of the tumor, from apex to base, shows the histopathology of an unusual, slowly growing adenocarcinoma of the bladder in which, in a few fields, there are mucus-secreting cells. The tumor is composed of numerous irregular, bizarre-shaped, varying sized, gland-like spaces with papillary projections lined by non-keratinizing polyhedral, elongated or columnar cells resembling those of the bladder mucosa. The tumor cells occur from two to several layers deep, and the character of the surface lining cells are of varying form and type; they may be flattened and squamous, cuboidal, columnar or polyhedral, with amphophilic cytoplasm; or, as in a few instances, they may be large and swollen, and distended with basophilic mucoid secretion which is pouring into the gland spaces. It is the presence of these mucus-secreting cells which suggests a possible origin of the tumor from the short tubular glandular epithelium found especially at the

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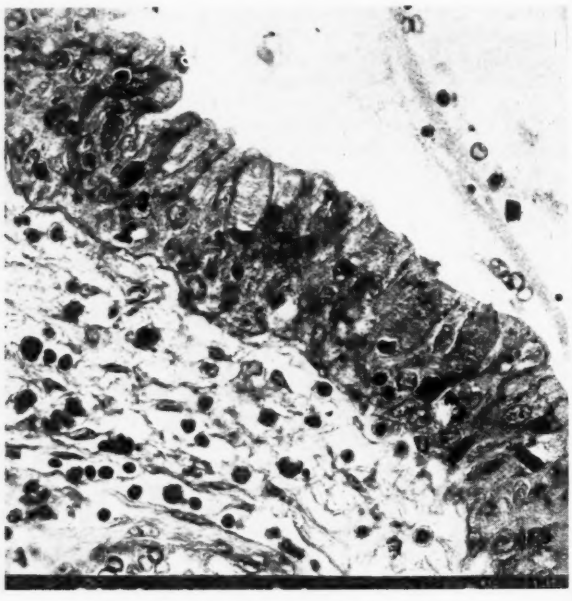
†Quinby—Clinical Professor of Genito-Urinary Surgery, Harvard Medical School. For record and address of author see "This Week's Issue," page 849.

internal urethral orifice and in the trigone, or from aberrant intestinal epithelium. The other or basal layer of cells of the irregular and tortuous gland spaces are as a rule slightly smaller, often fusiform, and are sometimes more basic staining than those of the inner strata, and they exhibit a distinct invasive property. Toward the base of the tumor there is direct extension of the epithelial structure into the submucosa and superficial muscle bundles. Mitotic figures are few in number. The epithelium at the surface of the tumor is composed of a thin



Area of tumor shows large, mucus-bearing cells.

layer of flat, squamous cells except for short stretches interrupted by ulceration. The stroma of the tumor, which is edematous, especially near the surface, is richly vascularized and is heavily infiltrated with lymphoid cells as well as with polymorphonuclear leucocytes among which eosinophils predominate. Foci of degeneration and massive neutrophilic leucocytic infiltration are also found. Infiltrating the epithelial structures, and within some of the gland lumina, there is a conspicuous presence of polynuclear leucocytes of the neutrophilic and eosinophilic variety. Thus, there is in this section a definite indication of both subacute and chronic inflammation, and also foci of acute necrosis and inflammation.

Diagnosis: Adenocarcinoma of bladder.

This patient illustrates the occurrence of a special type of tumor in the urinary bladder, a clinical manifestation of which is the production of large amounts of mucus in the urine and the formation of thick, tenacious shreds. Such tumors undoubtedly are due to embryonic rests, as in the earlier noted report by Dr. Colby. A further point is brought out by the present case, which is that these tumors are definitely radiosensitive, so that radium should be given the first choice as a therapeutic measure against such tumors, rather than resorting to an extensive excision.

REFERENCE

1 Colby, Fletcher H.: Embryonic rests of the urinary bladder, Surg. Gynec. Obst. 40: 528-530 (Apr.) 1925.

Discussion

Dr. Chute: I had a similar case about twenty years ago, which I reported with Dr. A. H. Crosbie, before the New England Branch of the American Urological Association, on March 5, 1912*. It was one of those goblet celled growths but if I remember, no one noticed particularly about mucus in the urine. In fact his urine was clear but for blood, according to my notes. The mass, 3 x 5 x 2½ mm., at the vertex of the bladder, was excised with the peritoneum and the full bladder wall, leaving a margin of 1 cm. of normal tissue. At autopsy, which occurred 15 months after operation, the symphysis pubis was invaded, with large metastatic masses in the mesentery and smaller ones in the omentum. It was a goblet celled carcinoma which was supposed to be due to an inclusion of tissue from the fetal rectum.

Dr. Quinby: The first one I had, when I sent a specimen to the pathologist, was called a piece of the rectum.

Dr. Chute: The pathologist reported in my case that there was an inclusion of embryonic rectal tissue.

*Chute, A. L., and Crosbie, A. H.: Mucous cancer of the bladder. Boston M. & S. J. 167:583 (Oct. 24) 1912.

BLADDER REACTIONS FOLLOWING THE APPLICATION OF RADIUM TO THE UTERUS*

BY GEORGE G. SMITH, M.D.†

In February, 1925, a woman of 49 was operated upon by a gynecologist here in Boston who did a hysterectomy for metrorrhagia. There was a suspicious induration in the anterior vaginal wall and he applied radium in the vagina, giving a dosage of 1200 mc. hours. Four years later this woman came to him with a story of bladder irritability and passage of blood. He cystoscoped her and saw what he took be an extensive carcinoma of the trigone or base of the bladder. He asked me to cystoscope her with him and I thought the same thing. The mucosa was edematous and slightly ulcerated, and the process was of such extent that it seemed to me the only really hopeful treatment would be a total cystectomy. She was advised to have this done and came into the Palmer Memorial Hospital a week later prepared for operation. Some

*Read at the meeting of the New England Branch of the American Urological Association at Boston, May 17, 1932.

†Smith—Urologist, Massachusetts General Hospital. For record and address of author see "This Week's Issue," page 849.

kindly fate led me to cystoscope her again before I operated and this time I thought the lesion looked considerably less pronounced than it did before. The center was still necrotic but it seemed to me that it showed more of the signs of a radium burn than of carcinoma so I said I thought we had better wait; cystoscopy a month later showed the process to be regressing still more and by August (it was April when I first saw her) the bladder was entirely healed.

In addition to this case I have seen at least seven more with a similar condition, although in the other cases the cystoscopic appearance was such that there was no doubt in my mind as to the nature of the process. These cases were mostly from the Huntington Memorial Hospital and had had radium treatment for the following conditions: Six cases had had carcinoma of the cervix, the customary dosage of radium in such cases being 3500 mc. hours of screened radon, most of it being applied in a silver capsule, with a few seeds implanted in the cervical tissue itself. One case, the one I spoke of, had a hysterectomy for metrorrhagia. Another case was one of fibromyomata uteri. The dosage in the carcinoma of the cervix cases varied from 3100 to 6288 mc. hours. In two cases in which the body of the uterus was treated the dosage was 2625 mc. hours.

The time at which the patient began to complain of bladder symptoms following the application of radium was as follows: one case 11 months, one case 15 months, one 21 months, one 23 months, one 3½ years, one 6 years. In two of these cases fistulae had developed. In the other six the lesion was simply a radium ulceration of the mucous membrane of the bladder.

The characteristic appearance of the lesion I think is worth mentioning. Practically always in the earlier stage, or shortly after the patient has begun to complain of symptoms, there is a central necrotic area and surrounding that radiating ridges of edematous mucous membrane, the summits of the ridges being colored a deep red. The characteristic thing, it seems to me, in differentiating this lesion and carcinoma is that with carcinoma the growth rises abruptly from the mucous membrane and one can see normal mucous membrane extending right up to the very edge of the tumor whereas in the radium burns, the mucous membrane for quite a zone around the central lesion shows edema and redness. As the lesion subsides, the central slough clears up, the edema disappears and red telangiectatic areas are seen extending around the point which was the central focus of the lesion. It is apparent that the mucous membrane of the bladder is considerably more sensitive to radiation than is the underlying connective and muscular tissue. Otherwise in every one of these cases the destruction would have extended all the way through the bladder wall whereas in many, six out of eight of these cases, the lesion was confined, so far as one could tell by observation and by the end results, to the mucous membrane itself.

Archie Dean in 1927 read the only article on this subject which I know of. In this he described three cases, and I see that at one of the coming meetings he is going to read a paper describing 47 cases. There is no doubt but this lesion will be more and more frequently met as radium is used more in diseases of the uterus. It is a little difficult to say what factors predispose one patient to show this reaction to radiation and another patient, who has the same dosage of radium, not to have it. Whether the intervening tissue is thinner in one case than in the other, I do not know, but that may be a factor. Dean says that the lesion is due to obliterative endarteritis which causes necrosis of the tissues supplied by the arteries which have been obliterated.

Regarding the length of time it takes to develop, in one of these cases the lesion did not develop until six years after the radium treatment had been given. The story generally is that the patient suddenly acquires symptoms of a cystitis and has blood in the urine. It seems to me possible that what may happen is that the bladder mucous membrane has been greatly reduced in its resistance; if then the patient has a cystitis the mucosa which has a lowered resistance is suddenly attacked by the infection and melts away, being less able to withstand the attack than the mucous membrane of the rest of the bladder. That is pure hypothesis, but it seems difficult for me to explain on any other grounds the extremely long period between the date of the radium treatment and the date of development of the bladder symptoms.

As regards treatment of this condition, Dean advises mercurochrome irrigations. Cases which I have followed have had no treatment other than observation through the cystoscope at perhaps monthly intervals and it has seemed almost as though the cystoscopy had a very beneficial effect on these cases. Whether it is due to the stimulating effect of the cystoscopic light or irrigating the bladder with boric solution I do not know, but it is a fact that they feel better and the process appears to start clearing up.

The length of time required for approximate cure in these cases was two months, two months, four months, four months, six months and ten months, respectively. The cases of vesicovaginal fistula, of course, did not heal up.

This is a very brief and sketchy presentation of this subject but I think it is worth mentioning in that we may see these lesions any time and in some of the cases one is likely to think that the condition is due to malignant growth.

Discussion

Dr. Graves: I think Dr. Smith's report has been a very timely one because we must learn,

—and of course we know much more about it now than we did in the earlier days,—to distinguish these postradium cases from the actual ulcerations of malignancy. I have an idea that perhaps as time goes on we may have fewer of them to deal with, as the gynecologists become more familiar with the minimum dosage of radium necessary to control the disease in the cervix and also the dosage which may be given with safety so far as the bladder is concerned. We see the condition occasionally at Pondville and the differentiation of a lesion resulting from radium, and cancer infiltrating through the floor of the bladder from the original growth in the cervix is not always easy but where there is reasonable room for doubt, it is our practice to make the decision usually by the lapse of a little time, giving evidence of progression or regression, rather than by any attempt at biopsy. As Dr. Smith has said, very often within a month the changes in the way of regression are sufficiently definite to put one on the right track if the condition has been radium burn rather than new growth.

I have had the same experience that he has had many times, that the radium lesion seems to improve rather promptly after the first cystoscopic examination, but I have accounted for it in my own mind a little differently. It seems to me that these conditions probably reach the height of their symptomatology at about the time when the patient is led to complain sufficiently to be examined and that the processes of repair follow soon after; in other words that the thing is really about ready to regress when the patient is uncomfortable enough to have us see it. At the worst it appears usually not to be too serious so far as the immediate fate of the bladder is concerned. We treat these cases as long as they remain in the hospital after cystoscopy, with daily instillations of argyrol and then they are allowed to go home with the insistence that they report again for inspection after a month and thereafter as often as necessary. Cure, when it takes place, seems to be complete and satisfactory at the moment. Whether there will be later developments in treatment I think we have not had adequate experience to say. It seems possible at least that at a later time, perhaps years after, there may arise some more serious pathological state in the bladder, resulting from fibrosis or telangiectatic change in the region of repair, just as might follow in the case of a radium or x-ray burn of the skin.

Dr. Eric Stone, Providence: I would like to mention a case which has come under my observation, similar to this, but different in the extent of the postradial pathology and difficulty in treatment of the case. A woman in her late twenties had had her uterus removed about eight months before, by gynecologists who implanted a good deal of radium in the stump. There was carcinoma of the fundus. About two months later, after leaving the hospital, she began to complain bitterly of bladder symptoms with voiding about every ten minutes of a very foul urine with blood, and a somewhat contracted bladder. A mass, roughly speaking $4 \times 2\frac{1}{2}$ cm., was found at the base of the bladder well up toward the cervix. The gynecologists cystoscoped her, found what they interpreted as a tumor in the bladder and accordingly opened the bladder again, took a specimen for biopsy and inserted radium into the mass. The following condition was worse than the one at the time of the second operation.

I saw her just previous to the paper that Dr. Archie Dean read here this year, in which he mentioned this condition. When I cystoscoped her I thought it was a tumor that she had despite the fact that the report from the pathologist merely reported it as chronic inflammatory tissue. The tumor was bigger than it was at the first operation. She was put on urethral drainage for about ten days with instillations of mercurochrome daily and later almost constant irrigations with mild permanganate solution without any reduction in the size of the mass or the constant bladder pain; so that at the end of a week a suprapubic incision was made and a suprapubic catheter was inserted. The bladder pain remained the same for about three weeks, then gradually diminished, but she still has a very appreciable mass. She is still, after four months, on suprapubic drainage which is keeping her completely comfortable but I admit that I am considerably puzzled as to when to stop this suprapubic drainage as I fear a closure of the sinus may bring back a return of the bladder discomfort inasmuch as the urine is not yet clear and the mass has only shrunk to about half its original size.

Dr. Vermooten: I want to ask Dr. Smith a question. At New Haven, the gynecologists and radiologists have a feeling that a large majority of the vesicovaginal fistulae resulting from radium treatment of carcinoma of the cervix is due to the fact that the carcinoma had already, at the time of radiation, extended through into the bladder without any definite urinary symptoms. For that reason, before any patient is allowed to have radium treatment for carcinoma of the cervix, she is referred to us for cystoscopic examination and it is for us to say whether we think it advisable that she should have radium treatment.

I have had the privilege of doing most of the examinations and in the majority of cases the bladder mucosa is perfectly normal. Occasionally I see the bladder mucosa just over and back of the trigone very definitely edematous and in cases in which there is edema of the bladder mucosa together with decreased bladder

capacity, we think that an indication of definite involvement of the bladder wall. This type of case with much radiation may slough through and form a fistula. I would like to ask Dr. Smith if he has any knowledge of this particular subject and would like to know what he regards as contraindications to the use of radium in the treatment of carcinoma of the cervix with bladder involvement.

Dr. Smith: I think that Dr. Vermooten's observations on this subject are very interesting and the precautions that they take at New Haven are well worth while. We have not followed that routine here, so I have no information about the condition of the bladder previous to treatment. I think there is a good deal in what he says about the possibility of some vesicovaginal fistulae being due to breaking down of a malignant growth which has already infiltrated the bladder wall. I think undoubtedly some vesicovaginal fistulae are not due to this cause, for example, when excessive doses of radium are used, but if the regulation dose of radium is used and vesicovaginal fistula results, I would think it possible that the fistula is due to breaking down of malignant tissue.

Dr. O'Neil: I think one of the important things to remember is the length of time these lesions are supposed to develop after radium exposure. I remember the first case I saw, a patient who had a very suspicious ulceration of the bladder. I did not get the history of any radium treatment at the first visit. She had her treatment at least a year before and it seemed so remote to me that I did not associate the radium with it, but the appearance of the growth was such that it seemed to be more inflammatory than malignant.

THE PROSTATE AND SEMINAL VESICLES AS A FOCUS FOR STAPHYLOCOCCUS SEPTICEMIA*

BY AUGUSTUS RILEY, M.D.†

I HAVE always maintained that a patient with a prostatitis has more or less accompanying vesiculitis. It may be hard to map out distinctly and prove the two existing inflammations, nevertheless I believe it is true that an infected prostate means an infected vesicle or vice versa. I also feel that in the deep posterior urethral infections, one seldom, if ever, sees an acute epididymitis unless the seminal vesicle on the side on which the epididymitis occurs has become more or less blocked, thereby causing poor drainage of that vesicle through the urethra. It may be hard to prove definitely that a metastatic infection takes place more readily from an infected prostate or infected seminal vesicle, but I believe that the weight of liability hangs heavier on the vesicles than on the prostate. This, I believe, has been fairly well proved by those of us who have done vesiculectomies for so-called "Gonorrheal Rheumatism." Better results have been obtained by complete vesiculectomy and incision and drainage of prostate than by simple incision and drainage of vesicles and prostate.

The urologist has definitely demonstrated what a source or primary focus the prostate and vesicles may be in a number of so-called hidden infections.

The case I wish to report to this association, "The Prostate and Seminal Vesicles as a Focus for Staphylococcus Septicemia," I believe brings out clearly the points I have just mentioned above.

Case — A male, 66 years of age, came into the G.U. Out-Patient Dept., Boston City Hospital, complaining of an enlarged and painful scrotum. He appeared ill, so was advised to enter the hospital. He returned home, but came to the department the following day when he was prevailed upon to enter the hospital, which he did on March 18, 1932.

His history was as follows: About one year ago he had gonorrhea, which soon cleared up. In October, 1931, he had another infection following extramarital intercourse. He was treated by a local doctor three times and the urethral discharge ceased. About three months ago his scrotum began to swell and become painful. About this time there was an attack of urethral discharge which was accompanied by frequency and dysuria. For the past three or four weeks he has noticed a trembling of his limbs and has been having a great deal of hiccoughing which is becoming worse.

Past history tells nothing of importance.

Physical Examination: A well-developed and well-nourished colored man was lying rather stuporously in bed in evident distress. He was hiccoughing frequently and violently. He tried to coöperate, but his answers to questions were dull and slow. The skin was warm. The tongue was dry and coated. The pupils were equal and reacted sluggishly to light and distance. There was considerable pyorrhea.

Lungs and heart showed nothing abnormal; B.P. 164/102.

Abdomen appeared distended; no tenderness was made out. There was no dullness suggesting a mass or free fluid.

The scrotum was very much swollen; it was tense and very tender. There was a small area of fluctuation on either side suggesting fluid. Both cords were hard, swollen and tender. There was a purulent urethral discharge. On rectal examination the prostate was much enlarged, boggy and very tender, making a more thorough examination difficult.

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There was a constant coarse tremor of both arms and legs. Reflexes were active.

Laboratory findings: Urine hazy, acid, Sp. Gr. 1018, Alb. V.S.T. Sug. +. Much pus. Blood—Reds 4,920,000, Whites 20.700.

Temperature 102. Respiration 25. Pulse 90.

March 19, 1932. Operation: Spinal anesthesia. Soap and water and alcohol preparation. Incision into left side of scrotum found the tunica sac full of seropurulent fluid and much fibropurulent material along the side of the epididymis. There was a large abscess of the lower pole of the epididymis. The remaining portion of the epididymis was studded with small abscesses, so much so that an incision was made throughout the length of the epididymis which was found full of pus. Cultures were taken. The tunica sac was flushed out with warm salt solution. A rubber dam drain was placed alongside of the epididymis bringing it out of the lower end of the wound. The scrotal incision was closed to the drain with deep interrupted sutures of silkworm gut.

A similar incision was made into the right side of the scrotum. The subcutaneous tissue was not so thick and brawny as that of the left side. Incision into the tunica sac found it full of thick, foul-smelling pus. Cultures were taken. There was no heavy serofibrinous material present or found in the left tunica sac. An abscess of the lower pole of the epididymis was found and incised. The tunica sac was flushed out with warm salt solution. A rubber dam drain was placed in the tunica sac alongside of the epididymis. The scrotal wound was closed to drain with deep silkworm gut interrupted sutures.

Dry dressing and scrotal support were applied and the patient was sent back to the ward.

March 20, 1932. Temperature 102. Pulse 100. Respiration 25. Patient has had two chills. Skin is clammy and cold. At times there is a profuse perspiration. Heart sounds are normal. No râles or signs of consolidation found in chest. Patient probably has septicemia. Blood for cultures obtained.

March 21, 1932. Temperature 101. Pulse 104. Respiration 24. Patient has grown much weaker during the past 24 hours. No signs of pneumonia found. Cultures from blood and pus reported, *Staphylococcus aureus.*

March 21, 1932. Patient gradually became weaker throughout the night. Pulse rose to 120. Respiration rose to 40. Patient died at 5 A. M.

Diagnosis: Septicemia, Staphylococcus aureus type.

Autopsy March 22, 1932, twelve hours postmortem.

The body is that of a well-developed, well-nourished colored male of 66 years. There is a large partially denuded area 10 cm. in diameter over the left abdomen. There is a thin purulent discharge from the penis. Silkworm sutures bind a recent longitudinal incision in the anterior portion of each side of the scrotum.

Peritoneal Cavity: Appendix present. The dome of the diaphragm rises to the fourth rib on the right side and to the fifth rib on the left side. Entire intestine to region of rectum is greatly distended. No points of obstruction found. There is fullness in the cul-de-sac. A small amount of thin yellow exudate is in the abdominal cavity.

Pleural Cavities: A small amount of thin yellow fluid in both pleural cavities. Otherwise negative.

Pericardial Cavity: A few flecks of fibrin. Some thick scarlike areas near the aorta.

Heart: Weight 455 grams.

Measurements:

Tricuspid valve	13.3 cm.
Pulmonary valve	9.2 cm.
Mitral valve	10.2 cm.
Aortic valve	8.4 cm.
Left ventricle	1.6 cm.
Right ventricle	0.3 cm.

Muscle is normal. Small calcified nodules at base of aortic valve.

One transverse calcified area on anterior surface of aorta.

Lungs: Weight 700 grams, each. Congested. No definite pneumonia.

Spleen: Weight 120 grams. Extremely soft. "Paint dreg" appearance.

Gastrointestinal: Negative throughout.

Pancreas: Weight 175 grams. Large. Normal.

Liver: Weight 1760 grams. Swollen. Mottled purple and yellow, and indefinite markings.

Kidneys: Weight 340 grams. Cortex measures 6 mm. Capsules strip with ease leaving a slightly granular surface. Several small abscesses about 4-6 mm. in diameter are found.

Adrenals: Marked postmortem changes.

Bladder: Contains about 10 cc. of thin purulent material.

Genitals: Prostate bulges on section, and is somewhat boggy. Urethra shows reddish mucosa. No strictures found. Seminal vesicles cannot be outlined. Seminal vesicle area occupied by an indefinitely outlined trabecular abscess which leads upward and backward, especially to the left. The purulent material extends to just beneath the rectal mucosa. Just beneath the rectal mucosa the finger-like extension is approximately 1.5 cm. in diameter. The infection has extended along the vas deferens. The epididymes are both swollen with purulent material and have apparently been opened. Although there is marked swelling about the testicles the tubules show no definite infection. Smears show staphylococci, but no gram negative diplococci.

Aorta: For the most part, thin, smooth and elastic. A few atheromatous plaques are present. There is one transverse calcified area at the arch.

Bone: Moderate 5" curve of spinal column. Marrow negative.

Lymph Nodes: Somewhat enlarged, but not hard.

Head: Not done.

Anatomical Diagnosis:

Bilateral Epididymitis.

Abscess in region of Seminal Vesicles pointing beneath Mucosa of Rectum.

Enlargement of Prostate

Enlarged Liver and Spleen

Congestion of Lungs

Dilated Intestine.

Comment: The pathological findings suggest the following:

An enlarged prostate, due either to hypertrophy or infection, or both; an infection involving the seminal vesicles and also extending to the epididymes of both sides; an extension from the seminal vesicles to the region beneath the rectal mucosa. Abscesses in the kidneys. Invasion of the blood stream—the terminal sepsis causing death.

Antemortem and postmortem blood cultures were positive for staphylococcus aureus, as was also a culture from the epididymes.

MASSIVE INTRAPERITONEAL HEMORRHAGE FROM RUPTURED SUBSEROUS VEINS ON THE SURFACE OF UTERINE FIBROIDS*

BY ALBERT A. SHAPIRA, M.D.,† AND ARNOLD STARR, M.D.†

DILATED and tortuous blood vessels on the surface of large uterine fibroid tumors are not infrequently noted in pelvic laparotomies. Their presence usually occasions no particular attention when interest is focused on the principal lesion. These varicosities occur as the result of congestive changes from torsion of the tumor mass or from pressure of irregularly growing leiomyomata, and are usually venous in character. They are subserous, running between the capsule of the tumor and the peritoneum. Several subperitoneal veins may unite to form thin-walled sinuses of considerable size.

That spontaneous rupture of one of these varices may occur with resultant massive intra-abdominal hemorrhage, is not generally known. As much as 3000 cc. of blood has been removed from the peritoneal cavity when hemorrhage followed erosion of a vein in the surface of a uterine fibroid. It is obvious that a serious emergency might be created by such a complication of an otherwise benign lesion. Most gynecological writers make no mention of this complication of uterine fibroids, although Graves speaks of the possibility of its occurrence, and isolated case reports have appeared, particularly in the European literature. It is altogether probable that the condition, while uncommon, is not so rare as the paucity of case reports would seem to indicate.

The occurrence of two cases of alarming intra-abdominal hemorrhage within a relatively short period of time has promoted this report and has directed our attention to the literature on the subject.

Rokitansky deserves credit for first writing about this condition in his textbook published in 1861. The case described was one of lethal hemorrhage from a ruptured subserous varix on the surface of a fibroid. Ransohoff and Dreyfoos, reviewing the literature in 1921, mention Brunner's ten authenticated cases collected up to 1910, one of Sadlier's in 1913, and added two of their own. Alexander, in 1927, and Hoffmann in 1928 each reported a case. Polacco observed two cases, and Arnould one, in 1930.

The factors which have been observed to be responsible for the spontaneous rupture of dilated subserous veins in connection with fibroids are trauma, sudden exertion or straining, and erosion of the vessel from friction or pressure of the tumor against the sacral promontory. Increased dilatation of the veins during menstruation and parturition, and inflammation and torsion of the tumor pedicle, are advanced as additional etiologic factors. It is apparent that vigorous bimanual palpation in the presence of fibroid tumors or too energetic Credé of the pregnant fibroid uterus may result in a serious complication. In one of our cases, sudden physical exertion probably accounts for the rupture of the vessel found bleeding at laparotomy.

The picture which these patients present varies with the amount of hemorrhage. We observed one case in which operation performed seventy-two hours after the onset of severe abdominal pain disclosed a fibroid tumor filling the pelvis, and approximately 500 cc. of liquid and clotted blood in the peritoneal cavity. On the surface of the tumor were many dilated subserous veins, one of which was found to be actively bleeding. The history here suggested that the initial bleeding had stopped—probably due to effective plugging of the rent in the vein by a clot which was later dislodged in the operative manipulations. Here the clinical picture was that of an acute abdominal process, mild hemorrhage, and a fibroid tumor. Ransohoff and Dreyfoos describe a similar case. Other cases have been observed in which the picture was that of a sudden abdominal accident with rapid exsanguination.

The differential diagnosis of this condition when associated with severe bleeding includes those lesions of the female genital tract which can produce serious intraperitoneal hemorrhage; ruptured ectopic pregnancy, ruptured corpus luteum cysts of the ovary, and torsion of adnexal tumors. In cases where hemorrhage is not the predominant feature, the condition may simulate that of acute appendicitis, ovarian cyst with twisted pedicle, or perforation of a viscus.

The pre-operative diagnosis of this condition is difficult. The rarity of the lesion precludes the likelihood of easy or frequent recognition, and many surgeons of long experience have never seen a case. However, acute abdominal pain and tenderness, with signs of hemorrhage, together with the presence of a fibroid tumor, should suggest the diagnosis of intra-abdominal hemorrhage from ruptured veins on the surface of the tumor.

The treatment is laparotomy with hysterectomy if the condition of the patient warrants major intervention. If the bleeding is of an alarming character, blood transfusion and abdominal section, with ligation of the bleeding vessel, have been recommended. (Ransohoff and Dreyfoos.) One could then perform hyster-

*From the Surgical Service of the Beth Israel Hospital.
We are indebted to Dr. C. G. Mixter for permission to include his case in our report.

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ectomy some time after the patient has recovered.

We wish to report the following two cases:

CASE 1. Number 12256.

Miss E. B., aged 37, a patient of Dr. A. A. Shapira, was admitted to the Beth Israel Hospital, September 28, 1931, complaining of pain in the abdomen and weakness. Seventy-two hours before admission, while shopping, the patient was seized abruptly with agonizing, lower abdominal pain. She fainted, recovered from her syncope, and was assisted home.

Ruptured subserous varix on posterior surface of fibroid, showing torsion of uterine tumor.

Her abdominal pain was severe for several hours, and radiated to the pelvis and both lower quadrants, then gradually decreased in intensity. Nausea was present, but no vomiting. The menstrual history was not remarkable, and her usual menstrual period was just over. For the past year there had been frequency of urination, a feeling of weight in the lower abdomen, and constipation. The past history was otherwise negative.

When seen seventy-two hours after the onset of symptoms, physical examination showed a well-nourished white woman, with skin and mucous membrane somewhat pale. The head, neck, chest, and extremities were normal. The abdomen was slightly distended and was generally tender, the tenderness being most marked across the lower abdomen, where a firm, irregular, suprapubic mass the size of a large grapefruit was felt. There was no spasm or rigidity. The liver, spleen, and kidneys could not be felt. Bimanual examination revealed an irregular uterine tumor of the size previously noted. The adnexa were normal, but tenderness was present in both vaults. The temperature was 97.4° by rectum, pulse 90, respirations 22, blood pressure 112/84.

The pertinent laboratory findings were as follows: leucocyte count 9,100, erythrocytes 4,300,000, hemoglobin 70%. Urine negative.

The morning after admission laparotomy was performed.

Operation: Under spinal anesthesia, the abdomen was opened in layers through a midline suprasymphysial incision, revealing a bluish discoloration of the peritoneum. When the peritoneal cavity was entered, a considerable quantity of free, fresh blood was noted, and the cul-de-sac of Douglas contained several clots. Filling the pelvis was an irregular uterine fibroid which had undergone torsion to the right, and on its surface were many dilated subserous veins. Both tubes and the right ovary were normal; the left ovary was slightly enlarged and contained many small cysts. The source of the bleeding was found to be a rupture in one of the subperitoneal varicosities on the right side which was oozing actively. Supracervical hysterectomy, left salpingo-oöphorectomy and appendectomy were performed. The excess of free blood was aspirated, and the clots gently sponged out. The abdominal wound was then closed in layers without drainage.

Postoperative course: The patient had an elevated

temperature up to 102 degrees Fahrenheit for three days following operation with the pulse ranging between 90 and 100. The temperature and pulse were normal on the fifth day, and from this time on the convalescence was uneventful. The patient was discharged thirteen days after operation, in good condition, with a well-healed wound.

CASE 2.

Mrs. R. K., aged 50, was a patient of Dr. C. G. Mixter, from whom we have the following communication: The patient, while at work in her store, reached upward to remove something from an upper shelf, and was seized with an intense, severe pain in her lower abdomen, so marked as to double her up and cause partial collapse. As soon as she was able to move, she was seen by her doctor who requested a surgical consultation. When seen, the patient was obviously in severe pain, which was referred chiefly to the lower abdomen, with some pain on motion and on deep inspiration, referred to the left shoulder.

The general physical examination was not remarkable. The abdomen was full, tympanitic and rigid, with definite muscular spasm throughout. In the lower abdomen a smooth, rounded, palpable tumor was present and extended to the umbilicus. This could be felt readily on bimanual examination. The tumor appeared continuous with the uterus and was apparently a fibroid of considerable size. There was some tenderness and boggy resistance in the posterior cul-de-sac. The pulse was about 100, was thready and of poor quality. The patient was immediately referred to the Phillips House for operation.

Operation: February 9, 1928. The abdomen was opened through a seven inch right paramedian incision and retracting the rectus muscle laterally. Opening of the peritoneum allowed the escape of a large amount of fluid and clotted blood. The mass felt previous to the operation proved to be a lobulated, fibroid enlargement of the uterus, the total mass being larger than a grapefruit. On lifting the fibroid up and tipping it forward, blood was found to come from a large vein on the posterior surface of the fibroid mass which was bleeding freely. This was controlled by pressure while a supravaginal hysterectomy was done with the removal of both tubes and the left ovary. The right ovary was normal in character and was not removed. The stump of cervix was closed with interrupted chromic catgut stitches. The broad ligament was closed with a running peritoneal suture of chromic catgut. The cervix was suspended by the round ligaments and the ovary sutured to the right margin of the cervical stump. No attempt was made at exploration of the abdomen on account of the patient's precarious condition. The blood clots were removed and the abdomen was closed in layers without drainage. The patient made an excellent convalescence and was discharged on the eighteenth day, her wound cleanly and firmly healed.

SUMMARY

An uncommon condition of intraperitoneal hemorrhage from ruptured veins on the surface of uterine fibroids is reported.

Our impression is offered that this lesion has not been sufficiently described, nor has it received the attention which its seriousness merits.

A brief survey of the literature is included in the discussion.

Two case reports which illustrate the essential features of this usually unrecognized condition are presented.

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A SIMPLE METHOD OF ADMINISTERING APPROXIMATELY ACCURATE MIXTURES OF OXYGEN AND CARBON DIOXIDE*

BY CHARLES C. LUND, M.D.†

INTRODUCTION

THE increased use of carbon dioxide and oxygen mixtures in modern therapeutics has made a study of methods important. Practically all such treatments are given through an anesthesia inhaler from a tank of previously mixed gas. Such apparatus is not expensive and is portable, but the gas mixture is very expensive if used for any length of time. At a consumption of 25 liters per minute the gas costs about $4.00 per hour. There is an added disadvantage in that the gas mixture cannot be varied in case the desired response is not obtained with a given mixture.

In laboratory work it is common practice to make such mixtures by volume in large spirometers. When this is done, commercial gas may be used and the cost for gas enormously reduced. However, the first high cost of such spirometers and the impossibility of transporting them make them useless for treating patients. In some unpublished experimental work a cheap, semi-portable apparatus was essential and the following technic was therefore devised, in which inexpensive commercial oxygen could be used. With this technic a mixture of 95% of oxygen with 5% of anhydrous carbon dioxide can be given at 25 liters per minute at a cost per hour of $0.50 instead of the above-mentioned cost of $4.00 per hour. This type of

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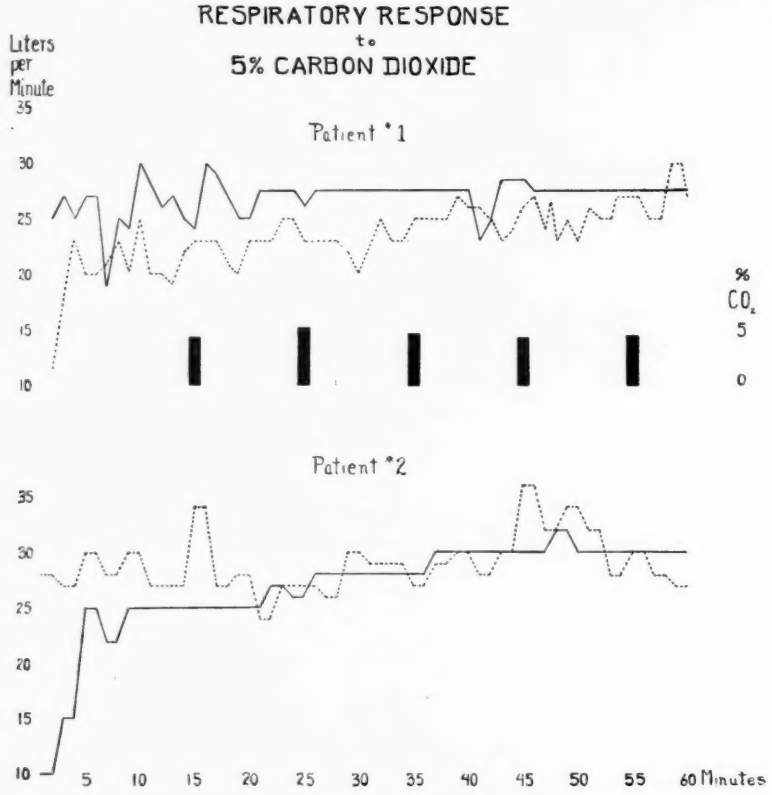
apparatus could be used to advantage in most conditions in which carbon dioxide inhalation treatment is indicated. A few of such conditions are pulmonary atelectasis, de-etherization, carbon monoxide poisoning and acute alcoholism.

FLOWMETERS

Anesthetists have used flowmeters for a long time in the administration of nitrous oxide and oxygen and other mixtures. Anesthesia apparatus was not suitable for our work for two reasons, however. First, the capacities of the meters were too small and, secondly, a tight mask could not be found that would be comfortable on a patient who was not anesthetized.

We found two flowmeters that were satisfactory. Both worked by measuring differences in pressure at two points on the gas line rather than by measuring volumes passing a certain point as ordinary gas meters do.

The first type was designed for us by Professor Philip Drinker of the Harvard School of Public Health according to the description by A. F. Benton[1] in his paper on the principles of such meters. This was satisfactory in use and measured accurately, but necessitated a very delicate hand in controlling the reducing valves, as a sudden increase in flow would blow the water out of the manometer. A better type and one that was just as accurate so far as we could tell by very careful calibrations was made for us by the Forregger Company of New York. This was similar to that used in their anesthesia apparatus, but in the case of our oxygen meter, of larger capacity. In using either of these meters it was essential to calibrate them after the apparatus was set up, as appreciable changes in resistance distal to the meter change the readings of the meter.



EXPLANATION OF CHART.

Solid Line—Gas Mixed by Flowmeters.
Dotted Line—Gas from Tank of Mixed Gas.
Solid Bars—% CO_2 by Analysis of Gas Mixed by Flowmeters.
Patient No. 1 operated the valves himself during the experiment.
In each case the two curves were made on successive days at about the same hour.

APPARATUS

The apparatus we used is as follows: The first two pieces consisted of our oxygen and carbon dioxide tanks. For carbon dioxide it is essential to have anhydrous gas or, otherwise, the water in the gas will freeze at the reducing valve. Commercial oxygen, however, will not do this. From the reducing valve on each tank the gas was led to the flowmeter for each gas. While using the Benton apparatus the meter was placed on a table and small bore rubber tubing made the connection. The Forregger meter, however, was mounted on the reducing valve thus simplifying the apparatus. From the exit tube of each flowmeter the gases were led by a

medium-sized tubing to a two liter heavy glass suction flask. The oxygen was introduced about one-half inch below the surface of a layer of water in this flask and the carbon dioxide through the side arm. Here the gases were mixed and hydrated. This latter was found to be very important for the comfort of the patient if the administration was to continue over ten minutes. From this bottle the mixed gases were led by large (1″) diameter tubing to a 9 liter spirometer which acted as a small reservoir and prevented the patient from breathing gas at any but atmospheric pressure. This spirometer was also essential in the necessary calibration of the meters. At the outlet tube from the spirometer was placed a "flutter" valve so as to prevent the patient's exhaled breath from going back into the spirometer. From this valve, large tubing led to a large metal T tube to which was attached another flutter valve through which the patient exhaled and which prevented inhalation of room air. On the end of the T tube was a rubber mouthpiece through which the patient breathed. A nose clip was used to confine his respiration to the gas in the apparatus.

OPERATION OF THE APPARATUS

The operation of the system is comparatively simple and has been taught to and used by two patients themselves in spite of the fact that they were comparatively uneducated laborers. In fact, one of them was practically illiterate. The only difficulty encountered is that the flow of gas must be adjusted very nicely to the consumption of the patient, as the reservoir of gas in the small spirometer will last only from 15-20 seconds with the spirometers full and the gas shut off entirely. Every time an adjustment is made of one valve the other must be adjusted to keep the mixture constant. In spite of this difficulty we have found it possible to keep our mixtures within a range of from 4.50 to 5.25 of CO_2 when operated by ourselves and of from 4.25 to 5.50 of CO_2 when operated by the patient. As a matter of fact the gas delivered by the medicinal houses is no more accurately gauged than this, as we have found by analyses of many tanks. In addition to checking the gas mixtures by analysis there was a constant check on them furnished by the respiratory response of the patient. Two charts will show that this response is quite as even with the gas mixed in the small spirometer as with the medicinal gas.

SUMMARY

An apparatus is described that is suitable for the administration of varying mixtures of oxygen and carbon dioxide gases. It has the advantages of simplicity, portability, and economy, and may be used to furnish any given mixtures of the gases, within certain ranges, merely by adjusting the valves. It is easy to run and delivers approximately accurate mixtures.

We wish to thank Mr. Philip Drinker and many others who were of great help to us in accomplishing this work.

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A TUBERCULIN TEST OF VALUE IN ADULTS
A Report of 225 Cases*

BY RICHARD B. KING, M.D.†

SINCE 1890, when Koch[1] announced his "cure" for tuberculosis, the attention of many students of the subject has been focused upon tuberculin. The therapeutic possibilities of this substance were exploited to the exclusion of its diagnostic uses until von Pirquet[2] brought forth in 1907 his well-known cutaneous tuberculin test. At once several modifications of this test were introduced, namely, the conjunctival reaction of Wolff-Eisner[3] and Calmette[4]; the percutaneous test of Moro[5]; and finally, in 1908, the intracutaneous test of Mantoux[6], which has so well stood the test of time that at present it is used more extensively than any of the others.

It is well understood today that a positive tuberculin test indicates a previous infection with tubercle bacilli and a consequent hypersensitization of the tissues to tuberculin. It is beyond the scope of this article to trace the development of the universal acceptance of this idea; the concept of the tuberculin reaction as a specific allergic phenomenon has been presented most convincingly by Krause[7–14], Zinsser[15, 16], and many other individuals. With the growth of this idea has come a discouraging realization of the diagnostic limitations of the test as it is commonly used. It is worthless as regards any attempt to demonstrate the activity of an existing tuberculous focus, being fundamentally *qualitative,* not *quantitative,* in nature. Since between 65 and 95 per cent of adults have been infected at some time with tubercle bacilli, the test has been practically limited to usefulness in infants and children, and as the age of the latter increases, the value of a positive reaction decreases.

It is thus in no way surprising that the clinical application of the tuberculin test in adults has largely been supplanted by other laboratory tests, no one of which has appeared to be of much value in the diagnosis of active tuberculo-

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sis. The *quantitative* factor, or measure of the *degree* of tuberculin hypersensitivity as a guide to the activity of a tuberculous focus, has been sadly neglected. It is interesting to note that from the time of the earliest description of the tuberculin reaction there has been a tacit admission, through the criteria laid down, of some relationship between the degree of tuberculin hypersensitivity as shown by the cutaneous reaction, and the extent of tuberculosis of the individual being tested. Thus von Pirquet required for a positive reaction, an area of erythema "not less than five millimeters in diameter". Mantoux's technique demanded the intradermal injection of "one drop of a 1:5,000 solution of tuberculin". Both thus presupposed a quantitative element in their tests. The medical literature is filled with reports of large series of tests, the results of which were usually read in several different degrees of intensity.

Römer[17], as early as 1909, made use of the quantitative factor in studying the varying degrees of sensitivity in guinea pigs injected with varying amounts of tubercle bacilli of differing virulence. He used the intracutaneous test, injecting measurable amounts of tuberculin. In the same year Ellermann and Erlandsen[18] first studied quantitative tests in man. They used the cutaneous test but varied the strength of the tuberculin applied to the skin; from observations upon 547 patients they concluded that their method was of distinct value in distinguishing active from quiescent tuberculosis. White and Graham[19], also in 1909, described another quantitative modification of the von Pirquet test. They concluded that individuals not reacting to 0.02 c.c. of concentrated old tuberculin, applied to the skin by their method, did not have active tuberculosis. Boardman[21] was unable to confirm their results, and concluded that their method admitted too many variable factors, such as the size of the cutaneous abrasion, the size of the drop of tuberculin, and the length of time which the tuberculin was left upon the abrasion. Hamman and Wolman[22], in their exhaustive book on tuberculin, emphasized as early as 1912 the "urgent necessity for an accurate quantitative tuberculin test", and expressed the hope that the future would bring forth some such test in the form of a modified intracutaneous test. Smith[23] proposed such a test in 1924, but gave no detailed report.

Atsatt[24], in 1927, described an ingenious quantitative modification of the intracutaneous tuberculin test which he used in 211 patients, both adults and children, suffering from osseo-articular disease. He concluded that the test was 90% efficient in determining the presence or absence of tuberculous activity. In 1929 Blair and Galland[25], stimulated by Atsatt's report, carried out his technique in testing 144 cases of osseo-articular disease. Their results were in striking accord with his, the result of the test being in agreement with the clinical impression in 90% of the cases. Smith[26] reported in 1929 that his experience with such a quantitative test led him to doubt its value; he gave no figures but said that he found the degree of reaction to depend more upon the amount of fluid (tuberculin plus diluent) than upon the actual amount of tuberculin introduced into the skin. Dickey[27], writing in 1929, reported observations on the size of the area of erythema resulting in a series of 700 positive intradermal tests in children. He concluded that while the children with clinically active tuberculosis of the hilar lymph-nodes did show greater skin reactions than those who were grouped as "latent", the degree of difference was not sufficiently striking to relate the degree of sensitization to the degree of tuberculous activity. These varying results prompted me to attempt to evaluate the quantitative test in adults with non-orthopedic disorders, and the results in a group of 225 cases form the basis of the present report.

Technique. Any attempt at quantitation of allergy demands that the antigen used be as standardized as possible. The usual method of making tuberculin results in a product which lends itself poorly to accurate standardization. Watson[28] investigated the variation in potency of different state and commercial tuberculins, and in 18 samples found three completely inert, while the rest varied widely in strength. Lewis and Aronson[29], Forbes and Steinberg[30], and others have also deplored the variation in potency in different samples of tuberculin which were alleged to have been "standardized". Atsatt stressed the importance of using the same tuberculin for all tests, but Blair and Galland used various lots of New York Department of Health tuberculin with equally good results. In the present series Atsatt's example was followed, and a large supply of Saranac human tuberculin was procured for use in all the tests.

The next step was to determine, for this particular lot of tuberculin, the dilution which was strong enough to give a positive skin reaction in individuals with proved active tuberculosis, and yet weak enough to give no reaction in those individuals in whom there was no evidence of active or recent tubercular infection. Forty young adult individuals, twenty with proved active tuberculosis and twenty healthy doctors and medical students, were tested. A series of intradermal injections, each consisting of 0.1 cc. of tuberculin, the dilutions of which ranged from 1:1,000 to 1:40,000, were given at the same time to each individual. It was found that the "critical threshold" for the tuberculin used was at a dilution of 1:20,000. At so high a dilution none but the actively tuberculous individuals gave a positive skin reaction. A majority of these individuals gave positive reactions to dilutions of 1:40,000 as well, but since

all did not, 1:20,000 was selected as the safe threshold. At the lower dilutions, such as 1:15,000 and 1:10,000, an occasional normal individual gave a positive skin reaction, though a majority of this group failed to give any reaction to tuberculin more dilute than 1:1,000. There is thus a wide margin of safety against false interpretations with the threshold selected. For Atsatt's tuberculin the threshold was 1:10,000; for that of Blair and Galland it was 1:25,000.

The tuberculin was diluted with normal saline solution to which 0.25% phenol had been added as a preservative. It is well known that concentrated old tuberculin will keep indefinitely, at low temperatures, without losing potency. With regard to tuberculin diluted to 1:1,000 or more, most investigators feel that such dilutions should be made up freshly every ten days or two weeks, and this plan was adopted in the present study in order that a closer comparison between the results and those reported by Atsatt, and Blair and Galland, might be made. It is, however, extremely doubtful whether such precautions are necessary in actual practice, and it appears likely that tradition, rather than fact, has been the basis of their adoption. Pilcher[31], in 1931, published the first careful report on the keeping properties of dilute tuberculin. He states that his solutions were kept sterile for four years with 0.2% tricresol; that two lots of dilutions of 1:10,000 retained their full potency for two and three years respectively; that dilutions of 1:1,000 were potent after three and one-half years; and finally, that a dilution of 1:1,000 kept at room temperature for one and one-half years was found to be both potent and sterile. In the present study the writer personally made up all the solutions used, and with but a few exceptions, each fresh lot of dilute tuberculin was tested on tuberculous patients and non-tuberculous controls to insure the proper potency of each solution.

The selection of the site for the skin test has been given a variable degree of importance by different writers, but if the same site is used in all tests such selection becomes immaterial. In the cases reported upon here, all tests were made on the inner aspect of the forearms. Atsatt suggested that if one wished to avoid the possible embarrassment resulting from a residual pigmentation of the arms, one could select the inner aspect of the thighs as a site for the injections, but on account of the possible variation in skin sensitivity to tuberculin in different parts of the body it was decided to confine tests to the forearms. Furthermore, unsightly pigmentation results only from the most florid positive reactions, and such individuals are usually confined to bed and are not interested in the possible cosmetic effect of the test.

The skin was gently cleansed with alcohol and allowed to dry. A careful intradermal injection of exactly 0.1 cc. of the solutions was made at well-separated sites, the stronger solutions being injected proximal to the weaker. Separate sterile tuberculin syringes and needles were used for each solution. In no case was there the slightest evidence of sepsis, and in only one patient was there any cutaneous sloughing from the injection of a 1:1,000 solution. In most cases, besides the routine injection of the diagnostic 1:20,000 dilution, injections of dilutions of 1:1,000 and 1:40,000 were also made at the same sitting. In this way greater information regarding the tested individual's allergy was obtained than when the 1:20,000 dilution alone was used. Individuals showing no reaction to 1:1,000 were tested with stronger solutions, sometimes with 1:100 or even 1:10. If there still was no evidence of skin hypersensitivity, such people were considered to be entirely free from tuberculous infection, either quiescent or active. The work of Happ and Casparis[32], has done much to correct the previously widely-accepted view that in overwhelming tuberculosis (or, indeed, in other pathological states cited in the literature as creating tuberculin anergy, such as measles, sepsis, anemia, metabolic disorders, etc.) there may be a complete loss of tuberculin hypersensitivity. They point out that if such individuals receive *enough* potent tuberculin into their skin (possible only with the Mantoux technique) they will give a positive reaction if they have, or have had, an infection with tubercle bacilli. There is no question that certain of these conditions do bring about a partial loss of tuberculin allergy, at times sufficient to prevent the individual from reacting positively to 1:20,000 despite an active tuberculous process. Such conditions, however, are usually obvious, and in their presence one should not be content with the use of high dilutions only.

The tests were read at 24 and 48 hours, the positive reactions almost invariably being maximal at the latter time. An area of erythema, nearly always indurated, 1 cm. or more in diameter, was considered a positive reaction to a 1:20,000 dilution, unless the control injection, consisting of normal saline solution to which 0.25% phenol had been added, was also positive. In only two individuals (one an asthmatic) in the entire series was such a control positive. Heise and Brown[33], writing in 1922, advised the use of glycerine-bouillon as the control solution. In a series of 443 patients they found 4% who gave a positive reaction to intradermal injections of glycerine-bouillon, and they felt that this fact lessened by that amount the value of the tuberculin skin reaction as a specific test. Smith[26] had very different results. He used glycerine-bouillon as a control solution for over a year at Bellevue Hospital, New York, without a single positive reaction to it, and he concludes that its use is unnecessary. Eddy and Mitchell[34] also used it in 196 cases without once causing a

positive skin reaction. It would thus seem that in the routine use of the Mantoux test a control injection might well be dispensed with.

With the exception of about thirty individuals, who were tested and the reactions read by an interne, all the tests in our series were made and read personally, thus eliminating the personal variable as far as possible. The few "doubtful" reactions which occurred were classed as "negative"; as a rule very little difficulty was encountered in interpreting the reactions, perhaps for at least one reason because there happened to be no Negroes in the series.

Some writers have felt that both human and bovine tuberculin must be used before the test assumes full significance. Thus Downing and Higgins[35] tested 51 children with active tuberculosis, and found eight, or 16%, who gave a negative skin reaction to human, but a positive reaction to bovine, tuberculin. They used dilutions of 1:1,000 made up from a commercial preparation of tuberculin. Tisdall and Brown[36] were unable to confirm these results; they tested 203 tuberculous patients and found none who gave positive reactions to bovine and negative to human tuberculin. They concluded that possibly the potency of the tuberculin used by Downing and Higgins was at fault. Burhans[37] seems to have conclusively demonstrated that the use of one type of tuberculin is sufficient. In 700 consecutive tests he found no patient who reacted positively to bovine and negatively to human tuberculin. At the present time the consensus of opinion is that it is the potency, rather than the type, of tuberculin which is important.

Results. An unavoidable obstacle to an accurate evaluation of any laboratory test is that in many instances there is lack of proof of the clinical diagnosis. In the present series of 225 cases a considerable number of diagnoses were incontrovertibly proved by pathological examination, surgical operation, or autopsy; but where such proof was not obtainable the diagnosis of the attending physician or surgeon, as it appeared on the patient's hospital or office record at the time of discharge, was taken as final. Sixty-one, or over a quarter, of the cases were in private patients, nearly all of whom were undergoing observation in hospitals. With the exception of the "normal" controls, and the "positive" controls (patients in the Channing Home for Tuberculous Women), all the other individuals tested were patients carefully studied at the Massachusetts General Hospital. Nevertheless it seems likely that while an occasional diagnostic error must have occurred in the more puzzling cases, such errors might counterbalance, as regards faulty or correct agreement with the results of the tuberculin test. At the present time a follow-up study is under consideration, in an attempt to determine the clinical course of those patients whose clinical diagnoses were not in agreement with the skin test.

Table I shows that the results of the tuberculin tests were in agreement with the final clinical diagnoses in 91% of the cases. In an attempt to ascertain whether the accuracy of the test varied significantly in different forms of disease, both tuberculous and non-tuberculous, a regional grouping has also been made in Table I, together with the varying percentage of accuracy of the skin test. The table shows that no definite conclusions can be drawn with respect to this point, because of the small number of cases comprising some of the groups. It is of some interest to note that the accuracy of the test was most at fault in the group of patients with disorders of the eye. As it is well recognized that in diseases of this organ the clinical exclusion or inclusion of tuberculosis offers much difficulty, it is quite possible that in several instances the clinical diagnosis, rather than the test, was in error, with a consequent marked percentage increase in favor of the test.

TABLE I

A Comparison of the Diagnosis and Tuberculin Test in 225 Cases

Site of Disease	Number of Cases	Percentage of Agreement of Tests and Diagnoses
Lungs	99	93+
Miscellaneous	48	90+
No disease	27	93
Abdomen	13	92+
Pleura	12	100
Lymph-nodes	11	82
Eye	8	63—
Joints	5	100
Kidney	2	100
Total	225	91%—

Table II gives a brief analysis of the 20 cases in which the skin tests were in disagreement with the clinical diagnoses. The errors were about equally divided between positive and negative reactions, there being nine of the former and eleven of the latter. Seven of these apparent errors are open to considerable question. Two were in patients with very extensive, progressive and ultimately fatal tuberculosis, in whom there was doubtless a marked decrease in tuberculin hypersensitiveness in the presence of an overwhelming infection. Neither of the two was in any sense a diagnostic problem. A third patient, with a negative test in contrast to the prevailing clinical diagnosis, was discharged from the hospital, within two weeks of the time of testing, as an arrested case. A fourth patient was suffering from laryngitis and an acute upper respiratory tract infection. The skin test was strongly positive, and a subsequent x-ray exam-

ination of the chest showed apical tuberculosis. The laryngitis, however, was thought to be non-tuberculous, and the pulmonary tuberculosis, on none too-conclusive evidence, was considered obsolete. A fifth case was quite dramatic. An interne offered to serve as a "negative" control for a series of tests being done on a physician who had suffered a spontaneous pneumothorax, the "positive" control being another patient with proved active pulmonary tuberculosis. All three individuals gave strongly positive skin reactions to the injection of 0.1 cc. of the 1:20,000 dilution of tuberculin. The interne was subjected to careful study, and an x-ray of the lungs showed bilateral apical tuberculosis which had been totally unsuspected. Since all other studies were negative as regarded the activity of his process, he was allowed to finish the last few weeks of his training, with, be it said, some misgivings concerning his future. The sixth case was that of a graduate nurse who, because of fever, abdominal complaints, positive tuberculin tests and her own intense desire, was subjected to an exploratory laparotomy with a pre-operative diagnosis of tuberculosis of the peritoneum. No abnormality of any sort was found, and later it was discovered that she was a malingerer. A seventh patient was also found to be malingering in order to obtain compensation for an industrial accident. The question is raised as to whether a person could produce a positive skin reaction by assiduous scratching of the site of injection.

TABLE II

AN ANALYSIS OF THE 20 CASES IN WHICH THE TUBERCULIN TEST WAS IN DISAGREEMENT WITH THE CLINICAL DIAGNOSIS

Clinical Diagnosis	Number of Cases	Remarks
Pulmonary Tuberculosis	5	Two very sick, one arrested, two unexplained.
Chronic Bronchiectasis	2	Both unexplained.
No Disease	2	One unexplained, one with pulmonary tuberculosis by x-ray examination.
Malingering	2	Possible trauma to skin to produce a positive test.
Acute Rheumatic Fever	1	Unexplained.
Erythema Nodosum	1	Two cases tested, one positive, one negative.
Acute Laryngitis	1	Pulmonary tuberculosis by x-ray examination.
Tuberculous Peritonitis	1	Very sick.
Tuberculous Iritis	3	Unexplained.
Tuberculous Adenitis	1	Unexplained.
Lymphoblastoma	1	Unexplained.
Total	20	

With regard to the remaining thirteen cases, in which the tuberculin test failed to agree with the clinical diagnosis, no satisfactory explanation could be found. If, however, the possible explanations concerning the above-mentioned seven cases be allowed, then the percentage of accuracy of the tests increases to an approximate figure of 94% for the entire series of 225 cases.

Table III compares the results of the present study with those of the only similar series to be found recorded in the literature. The results of all three are strikingly similar; when combined, which seems justifiable in view of the fact that aside from the most minor variations the technique in all was the same, it appears that in 580 cases the tuberculin test was in agreement with the clinical diagnosis 520 times, or 90%. The fourth series of cases is included in the table for the purpose of illustrating that the quantitative test in adults gives results just as useful as the routine qualitative test generally employed in children, as described by the recent excellent report by Moncrieff[38].

Comment. The clinical need for an accurate test of tuberculous activity is so general that any step in that direction should meet with the most careful consideration. With the eventual purification and definite standardization of tuberculin, the technique suggested by Atsatt will become of more practical value. The medical practitioner is constantly confronted with problems the proper solution of which depends upon a decision regarding tuberculous activity. When may a patient be permitted to leave the sanitarium as an "arrested" case? Should all idiopathic pleural effusions be treated as tuberculous? How much importance should be placed upon the incidental finding of a focus of tuberculosis in the lungs of a patient with no complaints referable to the respiratory tract? Are we to accept the roentgenologist's report of "obsolete tuberculosis"? Are many of the disorders of the eye, skin, joints and lymph-nodes,

TABLE III

A COMPARISON OF RESULTS IN FOUR SERIES OF CASES

Author	Year	Number of Cases	Accuracy of Tests	Type of Patient	Ages of Patients	Dilution of Tuberculin
King	1931	225	91.0%	Miscellaneous	Adults	1:20,000
Atsatt	1927	211	90.0%	Orthopedic	All ages	1:7,500
Blair	1929	144	90.5%	Orthopedic	All ages	1:25,000
Moncrieff*	1931	206	90.8%	Miscellaneous	Children	1:1,000

*Not quantitative; routine Mantoux technique.

which we are accustomed to label tuberculous, truly so? The medical literature today is filled to overflowing with accounts of the benefits to be derived from the early recognition of childhood tuberculosis, in large measure accomplished by the routine use of the tuberculin test in schools, but what of the older brothers and sisters now beyond the school age? They have been sadly neglected, and the increasing number of statistical reports dealing with the incidence of active tuberculosis among college students and other groups of young adults only emphasizes the need of a simple test for its detection.

While the technique described above might at first glance appear complicated, any physician with access to a few patients with proved active tuberculosis can readily determine the "critical threshold" for a given lot of tuberculin. The dilutions are easily made up and undoubtedly keep much better than has hitherto been supposed, a point of some importance to the physician who only occasionally might desire to make such a test. The present-day feeling that the control injection may be dispensed with further simplifies the technique. The only direct objection to this quantitative method to be found in the literature is that of Smith, quoted above, who found that the size of the wheal produced by the intracutaneous injection of fluid determined the degree of subsequent reaction rather than the actual amount of tuberculin introduced. Such has not been my experience. In forty cases showing positive reactions the average diameter of the area of erythema resulting from the intracutaneous injection of 0.1 cc. of a 1:20,000 dilution of tuberculin was 1.75 cm., while that from an identical injection of a 1:40,000 dilution was only 1.0 cm.

It is certain that there is no longer any question as to the safety of the procedure; the amount of tuberculin is far too small ever to cause a focal or constitutional reaction, such as is occasioned by the subcutaneous tuberculin test. Sepsis will not occur with proper technique. The amount of discomfort caused by the injections themselves is insignificant, while even the most strongly positive reactions cause no more than a slight tenderness and itching of the skin.

Any laboratory test which has proved to be only 91% accurate should never be relied upon to the exclusion of other corroborative methods of diagnosis. Nevertheless, it is felt that such a simple test deserves more widespread use, and if this occurs there will come further refinements which will increase its usefulness. The limitations of the test are now well recognized, and when these are properly appreciated the test becomes of greater significance.

CONCLUSIONS

(1) The quantitative intradermal tuberculin test was used in a series of 225 adults suffering from a wide variety of disorders. The result of the test was in accord with the clinical diagnosis 205 times, or 90 per cent.

(2) These results are in close agreement with those previously reported by Atsatt, and by Blair and Galland, in a series of tests on patients with osseo-articular disease.

(3) With the technique described, the accuracy of the tuberculin test in adults equals that of the routine method universally used in children.

(4) In view of the need for a simple method of determining tuberculous activity in the adult, the quantitative tuberculin test should receive far more consideration than it has hitherto been accorded.

I take this opportunity to thank many of the members of the staff of the Massachusetts General Hospital for their kind help which made this study possible.

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THE CANCER RECORD FOR 1931

Excerpts from a paper by FREDERICK L. HOFFMAN, LL.D., *Consulting Statistician.*

The cancer death rate for 1931 was just a shade lower than the corresponding rate for 1930. The apparent decline possibly reflects the increasing improvement in cancer treatment though the progress in this direction is much less than had been anticipated. As yet treatment depends almost exclusively on surgery and radium, while the medical treatment of the disease seems more or less at a standstill except for the Coffey-Humber treatment in California.

Of the actual value of this treatment medical opinion for the time being is decidedly skeptical, though strong claims are made for it on the part of its authors who have treated between four and five thousand cases in otherwise hopeless condition, and certainly in many instances with good results. No exhaustive study of the treatment of otherwise inoperable cancer cases has been made in this country corresponding to such an investigation in England*. My personal studies of the treatment favor the view that it is of considerable promise and that its extension to more hopeful cases is desirable.

The cancer death rate in this and other countries has possibly reached its maximum. The increasing practice of seeking earlier treatment and improvements in surgery and radiology are probably sufficient to arrest a further and substantial increase in the crude death rate. The situation as it is cannot be looked upon as other than appalling. The crude death rate of fifty cities has increased from 72 per 100,000 in 1906 to 121 in 1931, a period of twenty-six years. The probable number of cancer deaths in the country at large is approximately 125,000, constituting the third, or even the second, leading cause of death. Cancer is always a costly disease and perhaps one of the most costly afflictions of the American people. According to the results of a special analysis of 25,182 death certificates of cancer patients in some twenty localities in this country and Canada, the proportion dying who had previously been operated upon was 41.1 per cent for males and 43.5 per cent for females. Of some 30,026 cancer deaths in fifteen localities, the proportion dying in hospitals was 38.8 per cent, in institutions 3 per cent, for both sexes combined. The proportion is larger for men than for women.

It is a safe assumption that if cancer patients would go earlier to the hospitals with proper facilities for cancer treatment and submit earlier to radical operative treatment, a considerable saving in cancer mortality would result. At the present time the average known duration of the disease, based on an analysis of 24,250 deaths, is 17.6 months for both sexes or 15.6 for males and 19.4 months for females. Hence entirely too much time is lost between the first recognition of the disease and its skillful and adequate treatment.

Another factor of which much is made in discussions of cancer statistics is the alleged improvement in cancer diagnosis. Here again much is to be said in favor of the theory that the diagnosis is better today than at any time in the past, but ten years have not brought such profound changes as to impair the validity of the general conclusion that cancer during the last decade has increased approximately 25 per cent. But this question aside, it must be clearly realized that cancer is today the second or third leading cause of death, and therefore demanding increased attention irrespective of the question whether the rate is increasing or diminishing.

The results of San Francisco's survey justify the conclusion that cancer is not due to a single operating cause, but to a large variety of local conditions which can only be determined by painstaking analysis and correlation to the different factors of which, in my judgment, diet and nutrition assume prior importance.

Occupational cancers are relatively few and while extremely interesting from a scientific point of view constitute but a negligible quantity in the annual toll from cancer in the general population. While it is often argued that there is no specific dietary factor which explains the local cancer death rate, it may be said that this contention does not affect the larger question of general dietary and nutritional aspects of cancer considered from new standpoints. Progress in this direction of research is very much to be desired.

*Inoperable Cancer, by Dr. Lane-Claypon, Ministry of Health, London, 1931.

The statistics used by the author appear to have been published in *The Spectator*, May 12, 1932.

VERMONT STATE MEDICAL SOCIETY

HOUSE OF DELEGATES

THE fixed session of the House of Delegates of the Vermont State Medical Society, was held at 5 o'clock, Thursday afternoon, October 6, 1932, in Lecture Room A, of the Medical College Building, Burlington, Vt.

Dr. F. E. Farmer, President of the House of Delegates, called the meeting to order.

The Roster of the House was called, and by vote of the members, vacancies therein were filled from among the members of the Society, making the Roll of the House of Delegates as follows:

From Addison County Medical Society:
H. L. Williamson, Bristol.

From Bennington County Medical Society:
J. C. Armstrong, C. S. Buchanan, J. H. Reichling.

From Chittenden County Medical Society:
C. H. Beecher, C. A. Ravey, N. R. Caldwell, W. J. Upton, H. A. Durfee.

From Franklin County Medical Society:
Edwin A. Hyatt, Howard D. Hinman, F. J. Lawliss, W. B. Hyde.

From Lamoille County Medical Society:
W. M. Johnstone.

From Northeastern County Medical Society:
F. E. Farmer, R. H. Burke, C. D. Rublee.

From Rutland County Medical Society:
Stewart Ross, A. H. Bellerose, C. B. Ross, H. H. Hanrahan, H. S. Martyn.

From Washington County Medical Society:
C. H. Goyette, F. C. Angell, J. C. O'Neil, R. H. Bisson, L. W. Burbank.

From Windham County Medical Society:
J. A. Stevenson, F. L. Osgood.

From Windsor County Medical Society:
A. L. Patch. A. M. Cram.

The report of the Secretary of the House of Delegates was called for, and on motion of Dr. Beecher, and seconded, it was voted to accept this report as already printed.

The reports of committees of the Vermont State Medical Society, were called for, and on motion of Dr. J. A. Stevenson, and seconded, it was voted to accept them as printed.

No unfinished business was presented.

Under new business Dr. Stevenson moved that a Fracture Clinic be held by each county society during the coming year, to be in charge of the Council, the incoming President and incoming Secretary, at an expense not to exceed $750 to the Society.

Dr. Hyatt stated that inasmuch as there was to be a meeting, soon, of the New England Medical Council in Boston, whose purpose he believed to be the carrying of a fracture clinic to the various societies of the New England States, he thought it would be better to leave this matter with a committee.

Dr. Beecher offered an amendment to Dr. Stevenson's motion, to the effect that the amount to be spent should not exceed $500, and the further amendment that if desired, county societies could double up on the holding of such meetings.

This amendment was accepted by Dr. Stevenson, and the motion, as amended, was seconded, and it was so voted.

Under election of officers, Dr. Beecher nominated Dr. Lyman Allen, of Burlington, for President of the Vermont State Medical Society for the ensuing year. This nomination was seconded, and the House of Delegates so voted.

On behalf of the Washington County Medical Society, Dr. Goyette extended an invitation for the State Society to hold its 1933 annual meeting at Barre, which was accepted by the House of Delegates.

Dr. Stevenson moved that the President of the House of Delegates appoint a committee of three to bring in nominations, at an adjourned session of the House of Delegates Friday morning, for the balance of the officers and committees. Motion seconded and so voted.

President Farmer appointed as such committee: Dr. J. A. Stevenson, Dr. A. L. Patch and Dr. E. D. McSweeney.

There being no further business, the President declared the meeting adjourned until nine o'clock, Friday morning, October 7, 1932, in the same building.

Adjournment until 9 o'clock Friday morning.

Friday Morning Session

The adjourned meeting of the House of Delegates from Thursday afternoon, October 6, to Friday morning, October 7, 1932, at nine o'clock, was called to order in Lecture Room B of the College of Medicine, University of Vermont, Burlington, Vt., by Dr. Seth Martin, First Vice President of the House of Delegates.

In the absence of the Secretary, Dr. E. D. McSweeney was appointed secretary pro tem.

The Vice President, Dr. Martin, called for the report of the Nominating Committee, appointed at the Thursday afternoon session, by the President, which Dr. Patch gave, as follows:

President: Dr. Lyman Allen, Burlington.
Vice President: Dr. John Blodgett, Bellows Falls.
Secretary: Dr. William G. Ricker, St. Johnsbury.
Treasurer: Dr. David Marvin, Essex Junction.
Auditor: Dr. E. H. Buttles, Burlington.

Councillors:
1st District: Alan Davidson, St. Albans.
2nd District: Dr. John Trotter, Bennington.
3d District: F. E. Farmer, St. Johnsbury.
4th District: Dr. John Woodruff, Barre.

Executive Committee:
Dr. William G. Ricker, St. Johnsbury; Dr. R. E. Avery, Barre; Dr. A. L. Patch, Windsor.

Publication Committee:
Dr. William G. Ricker, St. Johnsbury; Dr. C. F. Dalton, Burlington; Dr. E. A. Stanley, Waterbury.

Legislative Committee:
Dr. C. G. Abell, Enosburg Falls; Dr. L. H. Ross, Bennington; Dr. R. M. Pelton, Richford.

Medical Education Committee:
Dr. A. C. Black (3 years), Brattleboro; Dr. S. W. Hammond (1 year), Rutland; Dr. J. H. Woodruff (2 years), Barre.

Necrology Committee:
Dr. B. D. Adams, Burlington; Dr. G. G. Marshall, Rutland; Dr. H. L. Pierce, Swanton.

Medico-Legal Committee:
Dr. J. N. Jenne (3 years), Burlington; Dr. F. E. Farmer (1 year), St. Johnsbury; Dr. E. A. Hyatt (2 years), St. Albans.

Health and Public Instruction Committee:
Dr. E. H. Buttles, Burlington; Dr. B. F. Cook, Rutland; Dr. P. K. French, Burlington; Dr. A. L. Patch, Windsor; Dr. E. H. Ross, St. Johnsbury.

Delegates to Other Societies:
Maine, C. G. Schurman, Newport.
New Hampshire, A. C. Walker, Springfield.
Massachusetts, John Trotter, Bennington.
Connecticut, E. D. McSweeney, Burlington.
Rhode Island, C. H. Goyette, Barre.
New York, J. A. Stevenson, Chester.
A. M. A., William G. Ricker, St. Johnsbury.
A. M. A. Alternate, C. H. Beecher, Burlington.

Anniversary Chairman:
John Gifford, Randolph

New England Medical Council:
Dr. Lyman Allen, Burlington; Dr. John Blodgett, Bellows Falls; Dr. William G. Ricker, St. Johnsbury; Dr. J. A. Stevenson, Chester; Dr. E. A. Hyatt, St. Albans.

Nominees to Governor for Appointment to the Board of Registration in Medicine:
Dr. M. F. McGuire, Montpelier; Dr. F. J. Hurley, Bennington.

House of Delegates—Officers:
President: Dr. Seth Martin, Burlington.
1st Vice President: Dr. A. B. Soule, Burlington.
2nd Vice President: Dr. A. C. Eastman, Woodstock.
Secretary: Dr. E. J. Quinn, Castleton.

On motion of Dr. Lawliss, and seconded, the report of the Nominating Committee was accepted as presented.

Under the heading of new business, Dr. C. H. Beecher moved that Article II, Sec. 2, of the By-Laws, pertaining to membership dues, be amended to read *$5.00*, instead of "$9.00", which motion was seconded, and it was so voted.

Dr. Marvin (not a member of the House) made a few remarks, pertaining to his report as treasurer of the Society.

Dr. Beecher moved that the House of Delegates go on record, recommending to the Board of Medical Registration that the Board exercise due care and diligence in granting certificates for the practice of medicine in Vermont.

Motion seconded, and so voted.

Dr. A. L. Patch moved that the House of Delegates convey to the Medico-Legal Committee, consisting of J. N. Jenne of Burlington, E. A. Hyatt of St. Albans, F. E. Farmer of St. Johnsbury and to the Society's counsel, Hon. Warren R. Austin, an expression of appreciation from the Vermont State Medical Society for their very excellent service, rendered to the Society over a long period of years.

Motion seconded by Dr. Lawliss, and so voted.

There being no further business it was moved that the meeting adjourn.

Motion seconded and carried.

Adjournment.

MISCELLANY

VERMONT DEPARTMENT OF PUBLIC HEALTH

SEPTEMBER, 1932

A total of 137 cases of communicable diseases was reported during the month of September. This is the lowest record of communicable diseases during any given month since September, 1930. Of these 137 reports, 68 were cases of mumps scattered rather widely over the state. The next few months will be of considerable interest as to the development of diseases, inasmuch as the usual experience is that after a very low period moderate to large increases are observed. However, since we have recently passed through a widespread epidemic of measles, chicken pox, mumps and whooping cough, it would seem that available material for these diseases is fairly well used up. During the month, one new case of infantile paralysis has been discovered, this being in Montpelier and of very mild character.

The incidence of communicable diseases is as follows: chicken pox 18, diphtheria 3, measles 8, mumps 68, poliomyelitis 1, scarlet fever 17, whooping cough 22 and tuberculosis 11.

A total of 1,389 examinations was made by the Laboratory of Hygiene in September, classified in the following manner:

Examinations

For diphtheria bacilli	63
For Widal reaction of typhoid fever	34
For malarial parasites	1
For tubercle bacilli	167
For evidence of syphilis	418
For gonococci in pus	156
Of water, chemical and bacteriological	100
Of water, bacteriological	187
Of milk, market	120
Of milk, submitted for chemical only	3
Of milk, submitted for microscopical only	74
Of foods	1
Of drugs	1
For the courts, autopsies	3
For the courts, miscellaneous	11
To complete death returns	1
Of animal heads for evidence of rabies	1
Miscellaneous	48

The Division of Venereal Diseases has received reports of thirty-four new cases of syphilis and sixteen reports of gonorrhea. Two hundred and sixty-nine Wassermann outfits and 129 gonorrheal slides have been sent out by this Division.

One hundred and nineteen patients were seen during September by the nurses in the Poliomyelitis After-care Division; 136 home visits made, 14 doctors visited, 17 pieces of apparatus fitted and 34 orthopedic corrections made to shoes. The vocational worker of this division reports sales made amounting to $605.56.

The State Advisory Nurse visited ten towns during the month, holding conferences with Home Demonstration Agents, meeting with Parent-Teachers Associations, Study Clubs and conducting school and preschool clinics. Three hundred and fifty-five notifications of birth registrations have been mailed and 1,123 pieces of literature distributed.

RECENT DEATH

FERRIN—Dr. Chester M. Ferrin died September 28, 1932 at the Mary Fletcher Hospital in Burlington, Vermont, as a result of a fracture of the hip following a fall the preceding Sunday. He was ninety-five years old.

Dr. Ferrin was born in Holland, Vermont, September 27, 1837. He served as a hospital steward in the Civil War and graduated in Medicine from the Medical School of the University of Vermont in 1865 and practiced in East St. Johnsbury and Essex Junction for fifty years. He was one of the group invited to visit Boston and attend the dedicatory services of the New England Medical Center in Boston as a representative of the old time family doctor.

Dr. Ferrin is survived by two daughters, Miss Caroline Ferrin of Burlington with whom he made his home and Mrs. E. D. Williams of Hartford, Connecticut. A son, Dr. Charles F. Ferrin of New London, Connecticut, died a few years ago.

MISCELLANY

DR. RICKER ELECTED PRESIDENT OF THE NEW ENGLAND MEDICAL COUNCIL

At the meeting of the New England Medical Council held in Boston, October 11, 1932, Dr. William G. Ricker of St. Johnsbury was elected President.

DANGERS OF OVEREXERTION

Although it has been long recognized that people past middle life are especially apt to be affected by any undue strain on the circulatory apparatus, many who ordinarily live in offices but who devote a certain amount of time to unwarranted recreations out-of-doors should be warned of the possibility of even minor strain upon a heart which is not in condition to meet unusual stresses. Not only in the summer time but in the autumn many people leave their offices and go into the open for the enjoyment of out-of-door life. The lure of the woods appeals to men who earlier in life were devoted to hunting and induces large numbers to go to remote places and, under the stimulus of the chase, may bring to bear very evident dangers resulting in illness if nothing more. Golf has been found to have a certain element of danger for people who are insufficiently accustomed to even moderate exercise.

Such questions apply especially to the wisdom of having regular health examinations so that everyone who engages in exercise at intervals only may be warned of any possible weakness.

MORTALITY RATES

Telegraphic returns from 85 cities with a total population of thirty-seven million for the week ending October 22, indicate a mortality rate of 10.5 as against a rate of 10.8 for the corresponding week of last year. The highest rate (19.6) appears for Memphis, Tenn., and the lowest (5.4) for Schenectady, N. Y. The highest infant mortality rate (18.6) appears for Fall River, Mass., and the lowest for Duluth, Minn., Evansville, Ind., Long Beach, Calif., Lowell, Mass., New Bedford, Mass., Schenectady, N. Y., Tampa, Fla., and Toledo, Ohio, which reported no infant mortality.

The annual rate for 85 cities is 11.1 for the forty-two weeks of 1932, as against a rate of 11.9 for the corresponding period of the previous year.—*Bulletin, Bureau of the Census.*

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 18451

TWELVE HOURS' ACUTE GENERAL ABDOMINAL PAIN

SURGICAL DEPARTMENT

A Scotch-American chauffeur thirty-seven years old was admitted to the Emergency Ward November 13 complaining of acute abdominal pain of twelve hours' duration.

The night before admission at ten o'clock he was seized with sharp pain in the region of the umbilicus, soon becoming generalized. He was nauseated but did not vomit. By midnight the pain had become less and he felt somewhat better, although he did not sleep. He had a slight hacking cough which hurt his abdomen markedly.

For years he had been troubled with gas. He had taken malted milk with relief. He also had burning and occasional nausea.

Clinical examination showed a fairly well nourished man lying with his knees drawn up, evidently in pain. The heart and lungs were normal. The abdomen was board-like. The point of maximum tenderness was in the epigastrium. The liver dullness was obliterated. Rectal examination showed no tenderness.

Before operation the white blood cell count was 17,500. The urinary sediment was negative. Hinton and Wassermann tests were positive.

Operation was done the day of admission. The patient improved until November 17. Then, although the chart was coming down and the general condition appeared good, he was quite irrational. The temperature and pulse rose. November 18 there were indefinite signs in the chest. Rectal examination showed a suggestive bulging high up. The next day a small pelvic abscess was incised and drained through the left rectus. A blood culture was sterile. A culture from the pelvic abscess showed diphtheroids and micrococcus tetragenus. A portable x-ray film taken November 19 showed the diaphragm high on each side, flat on the right. The diaphragm appeared to move, though this appearance may have been due to change in the patient's position. Both cardiophrenic angles were dull. The lung fields were clear. No positive conclusions could be drawn from the films. That day and the next there was stercoraceous vomiting. November 20 x-ray examination showed some apparent extension of the dullness at the left base. That day the patient became wildly irrational and died.

CLINICAL DISCUSSION

BY RICHARD C. CABOT, M.D.

Appendicitis is the first thing that comes to mind, although as often happens the pain is not in the right iliac fossa. When the cough comes we wonder whether he has a referred pain from some disease above the diaphragm. With such a history as this we cannot do anything more than guess.

"For years he had been troubled with gas." This makes us wonder whether this is a referred peritonitis from peptic ulcer. It is perfectly conceivable. All we can say is, if he is not alcoholic the next cause of these symptoms of chronic dyspepsia is peptic ulcer. Especially when we have an acute abdominal emergency like this we go back to the commonest form of stomach trouble most likely to lead to that.

He certainly has general peritonitis. The only question is the source of that general peritonitis, and I should say the best guess—it cannot be more than that—is the one I suggested originally,—peptic ulcer, the second appendicitis, the third gall-bladder disease.

"Heart and lungs normal"; that is not conclusive, but it is pretty good evidence, I think, that he has nothing important above his diaphragm.

I will make a diagnosis of perforative general peritonitis, cause, peptic ulcer first, appendicitis second, and gall-bladder third.

PREOPERATIVE DIAGNOSIS (FROM HOSPITAL RECORD)

Perforated duodenal ulcer.

OPERATION

On the anterior surface of the duodenum, apparently just beyond the pyloric ring, which was practically sealed off by adhesions to the under surface of the liver, a perforated duodenal ulcer was closed transversely. A tab of fat was brought down over the suture line. There was a tremendous amount of creamy pus without odor over the liver and in the right flank. This was aspirated by suction. A small amount of sterile salt was put into this portion of the abdomen and sucked out. There was apparently little if anything in the pelvis.

In view of his condition and his youth and of the fact that so far as could be told all of the gross fluid was removed, and particularly since there was no odor to it, drainage was decided against and the wound closed.

FURTHER DISCUSSION

DR. CABOT: Diphtheroids and micrococcus tetragenus, I take it, are neither of them of any importance, are they?

DR. TRACY B. MALLORY: I do not believe so.

DR. AUBREY O. HAMPTON: I am afraid the x-ray examination will not help, principally because he could not coöperate enough to allow us to obtain the information. They wanted to know whether his diaphragm was moving or not. We did not get any motion of the diaphragm at all. Whether the patient did what we told him to or not I do not know. That is the trouble with the film test of diaphragmatic excursion. All these films show mottled dullness above the left diaphragm. Ordinarily the diaphragm is not so thick as that. The right diaphragm, if that is the diaphragm, is abnormal, but it is probable that the border of the heart is seen below the dome of the high diaphragm on both sides.

DR. CABOT: What are the possibilities about that thickened left diaphragm? He has not diaphragmitis, has he?

DR. HAMPTON: I do not know. He has pathology just above the diaphragm. I do not know what it is.

DR. CABOT: The left lung field was not clear. They were thinking about a bronchopneumonia down there.

The stercoraceous vomiting shows that the peritonitis has led to intestinal obstruction.

He died of general peritonitis, presumably with bronchopneumonia, which they usually have, following a perforative peritonitis from duodenal ulcer with intestinal obstruction. The striking thing is that a man can have a perforation from an ulcer which apparently has given him so little trouble. Of course we may be deceived about that. He may have had more than we have had time to learn. But the perforation apparently came, as often happens, with very little illness to lead up to it.

A STUDENT: Why are you so firm about saying it could not be anything but general peritonitis?

DR. CABOT: Board-like abdomen following such pain, tenderness in the epigastrium—if there is anything else that gives that I do not know what it is. I should say that intestinal obstruction by itself does not give it, and there is no other lesion that I know that does.

I have not discussed the possibility of subphrenic abscess. This is just the sort of case where it is likely to happen. We have no evidence for or against it.

A STUDENT: Is not localized tenderness around the umbilicus indicative of or pathognomonic of a small intestine lesion?

DR. CABOT: No. I wish I knew anything that is. I should say from this tenderness we can tell very little indeed.

A STUDENT: What is the significance of stercoraceous vomiting?

DR. CABOT: Stercoraceous vomiting means that we have reversed peristalsis owing to cessation of peristalsis of the normal type and blocking below. General peritonitis of the ordinary type, unless it gets well, ordinarily leads to intestinal paralysis and stercoraceous vomiting, that is, fecal vomiting.

A STUDENT: Should not acute pancreatitis be considered?

DR. CABOT: You mean before the operation? Yes, you are right. That should have been considered. I think the only thing against it is the long stomach history, but nevertheless I should have considered it. If I had I could not have done anything more than mention it. We had no time to get any evidence pro or con. I think such sudden intense peritonitis does not ordinarily come quite so quickly from pancreatitis. Pancreatitis is slower as a rule.

A STUDENT: Is there any relation between syphilis and this condition?

DR. CABOT: No, none.

A STUDENT: Is bronchopneumonia connected with peritonitis?

DR. CABOT: Yes. That is, one gets the lungs not functioning as they should, a poisoning of the whole body and a depression of all functions. People are likely enough, you know, to get bronchopneumonia at the end of life with no discoverable reason. When we have all these reasons—the high diaphragm and presumably very little motion in it, with poor general condition and sepsis—we have three things any one of which is enough to give bronchopneumonia.

A STUDENT: What is the significance of the abolition of liver dullness?

DR. CABOT: There are two possibilities. If there is free gas in the intestine, as there is quite likely to be here, that would cause it. But we are never sure of that because if the large intestine is blown up it will do just the same thing.

DR. MAURICE FREMONT-SMITH: If the perforation were lower down, we should very likely have colon bacilli. Could you say that?

DR. MALLORY: Yes. That is an extraordinary finding. It rather sounds as if they had spit in the culture.

A STUDENT: What were the points in this story that made you think of peptic ulcer?

DR. CABOT: The long stomach history.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Perforated duodenal ulcer.
General peritonitis.

DR. RICHARD C. CABOT'S DIAGNOSES

Duodenal ulcer with perforation.
Perforative peritonitis with intestinal obstruction.
General peritonitis.
Bronchopneumonia.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Perforated duodenal ulcer.

2. *Secondary or terminal lesions.*
   Pelvic abscess.
   Intestinal obstruction.
   Bronchopneumonia.
   Acute bronchitis.
   Syphilitic aortitis.
   Operative wound, suture of perforated duodenal ulcer.

Pathologic Discussion

Dr. Mallory: The acute stage of perforated ulcers and of hemorrhagic pancreatitis may be clinically quite indistinguishable. In differentiating a perforating ulcer and hemorrhagic pancreatitis the most important thing is the past history. If it points towards disease of the stomach it is probably ulcer. If it points towards the gall bladder it is very likely to be pancreatitis. Unless we can get a history of gall bladder disease we cannot make a preoperative diagnosis of pancreatitis.

We found the sutured duodenal ulcer as the primary complaint, and everything else was secondary to that except for a few incidentals. General peritonitis was not present; in other words, the cavity had succeeded in walling off the infection pretty well. At the time of autopsy pus was found only in the pelvis.

They made two attempts to drain the pelvis, one through the incision in the right rectus muscle, another in the left rectus muscle. They had not however got low enough to reach the main pocket of pus. I think if they had attempted to drain that through the rectum they would have been more successful, because there was an undrained fairly large pocket just anterior to the rectum. A loop of the small intestine had become adherent in the wall of this abscess and was kinked to the point of complete obstruction. Above that point the gut was dilated, below it completely collapsed. If in this case they had succeeded in locating and draining that abscess and had done a low ileostomy, I think there was a fair chance that this man might have pulled through.

There was collapse of both lower lobes, as there so frequently is in upper abdominal lesions; a bronchopneumonia, a fairly marked acute bronchitis, and an incidental finding of syphilitic aortitis.

CASE 18452*

INCAPACITATING DYSPNEA IN AN UNUSUAL CHEST CASE

Surgical Department

Presentation of Case

Dr. Harry M. Spence**: *First admission.* This is the case of an Irishman fifty-five years old, white, married and unemployed at the time of entry, February 19. He was formerly a clerk in a brewery. His chief complaint was shortness of breath of five months' duration.

He had been perfectly well until he noticed difficulty in climbing stairs. Two and a half months before he came in he noticed some epigastric distress and fullness of the upper abdomen, relieved by belching. X-ray examination showed fluid in the chest. Before he came into the Massachusetts General Hospital he had been in two other hospitals. Three chest taps were done, all of which were dry, although prolonged efforts were made to get into the fluid, which one would have thought from the x-ray appearance that it would be easy to do. One month before he came in he had unproductive cough and dull pain in both sides of the chest, especially on the left. The dyspnea had gradually increased until it was thoroughly incapacitating when he entered the hospital. He had some pain in various joints. He had gained seven pounds in the past year.

He had malaria after the Spanish war.

Physical examination showed a very robust Irishman who had marked dyspnea even when sitting in a chair. There were some purplish macules on the left chest. The trachea deviated markedly to the right in the neck. The left chest was flat throughout its entire length, from apex to base, with absent breath sounds and tactile fremitus and decreased voice sounds. The apex impulse of the heart was seen and felt in the fifth interspace 10.5 centimeters to the right of midsternum. No sounds could be heard to the left of the sternum. There was a soft blowing apical and basal systolic murmur. The liver edge was palpable 4 fingerbreadths below the costal margin. The spleen was easily felt. In the epigastrium to the right of the midline there was a sense of resistance and probably a mass, though it could not be definitely mapped out.

The red blood cell count was 4.5 million, the hemoglobin 70 to 80 per cent. There was no elevation of the white count.

It was felt that he had an effusion into the left pleural cavity. X-rays were taken which more or less substantiated that diagnosis. There was dullness throughout the left chest. Two attempts were made to obtain fluid in the left midaxillary line in the angle of the scapula to the depth of four inches. No fluid was obtained at the first. At the second, 5 cubic centimeters of cloudy fluid was obtained, then only blood. It was then decided to inject air. Twenty cubic centimeters of air was introduced into the pleural cavity with a syringe, and a few drops of fluid were obtained. At the end of the injection of 20 more cubic centimeters he threw up his left arm, became pale and went into marked collapse. He was pulseless and no heart sounds could be auscultated. One cubic centimeter of

*The following report gives the essentials of two discussions, one in Dr. Cabot's Third Year class, one at a conference of the hospital staff.

**Recently senior interne on the West Surgical service.

adrenalin was given into the fourth space and no blood was aspirated. Half a cubic centimeter more was given and blood was obtained. Shortly after the adrenalin was given he resumed a rapid irregular pulse rate and in the course of a few hours he had recovered consciousness and was none the worse for the episode. There were no subsequent neurological signs.

The matter of operation was taken up with relatives. It was decided that the patient should go home for a week, settle family affairs and come back for operation.

Second admission. On March 14 he reëntered. On March 17 a small section of the seventh rib was taken out under local anesthesia and a biopsy done. In view of the fact that the dyspnea was so incapacitating that the man could not do anything, exploration was agreed upon and on March 29 this was done under avertin and gas oxygen. The man made a good recovery, but died four days later, possibly of what we took to be bronchopneumonia.

Dr. Aubrey O. Hampton: The x-rays show a very dense homogeneous shadow occupying the whole left lung field except for an area just under the anterior end of the first left rib. It extends to the extreme apex. There is what we think is a gas bubble in the stomach, very low. The heart is markedly displaced to the right.

Dr. Tracy B. Mallory: The apex of the heart was felt exactly in the position where it would be in situs inversus, but the liver and spleen did not seem to be reversed.

Dr. Hampton: We decided that there was not transposition of the viscera because of the position of the aorta and the shape of the right side of the heart. The aorta was on the right side of the trachea. There is certainly no large soft tissue mass in the left upper quadrant. The right diaphragm is low and the right lung is clear. We took some rib films and films to show the vertebrae, searching for erosion or metastasis to the ribs, and we found nothing. There is air in that area which I think is almost enough to differentiate fluid and tumor, because fluid obliterating the apex would not be likely to fail to obliterate the whole lower part of the lung.

Here we have a lateral view showing the anterior part of the lung aerated in that particular location.

We gave him some barium. The esophagus was perfectly normal except for displacement to the right. We had no films of the stomach. I think that pressure defect is due to the arch of the aorta. Again we see that queer air-containing cavity in the lung which should be enough to differentiate fluid and tumor. In some of these overexposed films the medial margin of the dullness on the left side is seen swinging out. In one of these it has a regular lobulated border. That would be rather unusual for fluid. Also the dullness extends to the extreme apex of the lung and yet we may have a small portion of aerated lung at the anterior portion. That would be quite unusual for fluid. We did not find anything in the right lung. I think we would assume that there was a large tumor, particularly after we know that there was no fluid from the chest tap.

The lumbar vertebrae and the ribs and pelvis are all negative except for hypertrophic changes.

Clinical Discussion

In Third Year Class

Dr. Maurice Fremont-Smith: One would feel that the early part of that history was consistent with cardiac failure. He is of the right age. His dyspnea on exertion and I suppose his epigastric distress could be the result of chronic passive congestion of the liver, and the belching the result of congestion of the stomach. Also his unproductive cough would be consistent with failure of the left side of the heart, the first symptoms being due to right sided, the later to left sided failure.

There is some pain in various joints. That is not part of the picture of chronic passive congestion. We ought to keep our eyes open for subacute bacterial endocarditis. He did not feel ill.

I do not know what those purplish macules were. They may have been little blotches of dilated blood vessels, tiny angiomas. They may have been hemorrhagic petechiae.

If it is true that the apex impulse of the heart was 10.5 centimeters to the right of midsternum he had situs inversus, because no normal heart could be so much displaced as that.

With the entire left lung field flat in front and back except at the extreme apex we now begin to find evidence that the heart may have been displaced.

He could not have had flatness as a result of collapse of the lung because if so the heart would be pulled to the left side. He could not have flatness from a thickened pleura; he would have dullness, and the heart would not be displaced. He could have flatness from some new material in that left chest. The only two things I can think of are (1) fluid and (2) neoplasm. If he had had very marked fibrosis of the lung such as marked fibrous phthisis, the heart and trachea should be pulled over towards that side instead of being displaced. He would also probably have had some râles.

If we assume neoplasm as causing the enlargement of his liver we should have loss of weight; we should not have an enlarged spleen. If we consider chronic passive congestion, again there should be no enlargement of the spleen. We have enough in that left chest to account for his dyspnea without any essential cardiac failure. What can he have in that left chest that

will explain the findings there, the displacement of the heart and the enlargement of the spleen and liver? I suppose that malignant lymphoma in the left chest could explain the situation. It seems to me at the moment the only thing that could. Of course we must remember that he had malaria at the time of the Spanish war; the spleen should perhaps be thrown out as part of the present picture. I do not see how there can be malignancy of the stomach. It is very hard to see how there can be malignancy of that degree anywhere with a gain in weight unless we find evidence of edema and ascites. There seems to be no evidence of those.

Before we see the x-rays are there any other possibilities? Fluid from cardiac failure is usually in the right chest if it is on one side only. If it is in the left chest it is usually on both sides. Malignancy of the bronchus would probably give pain or hemoptysis or hoarseness and loss of weight before it would give the signs we have here. The same statement would apply to Hodgkin's of that degree, but I think Hodgkin's is the best diagnosis.

One would like to find some explanation for the findings on a non-malignant basis because of the absence of loss of weight. The only possibility that occurs to me is an echinococcus cyst or some cyst other than that, the type of which I cannot even guess, which might fill up the chest and give this picture. The absence of loss of weight and of anemia are arguments against any of the malignant conditions, although the hemoglobin can be high in certain malignancies. It may be high in cancer of the stomach.

I think injecting air into an unknown cavity is a vigorous procedure. In this case it probably got into a vein where it was carried to the heart; he had in other words an air embolus. It is surprising that he got through it.

Dr. Mallory: Dr. Churchill resected portions of several ribs and came down upon a very solid tumor. He was unable to make out whether it was in or on the lung. He removed at first as a biopsy only a very small piece, which was made up only of fibrous tissue. We felt that it was probably a slowly growing fibrosarcoma. On the twelfth day a second operation was performed with the idea of resecting it. A portion of it 11.5 centimeters in diameter was removed for biopsy.

Dr. Spence: The final pathologic report was fibrosarcoma.

Clinical Discussion

At Staff Conference

Dr. Edward D. Churchill: The first thing of note in this history is the incident of severe collapse on the medical ward when everyone thought the patient was dead. That clinically is sometimes termed pleural shock. However, when all the evidence is brought together on a case of so-called pleural shock, we feel more and more that it can be attributed to air embolism. When air enters a pulmonary vein radicle and is carried through the heart into the arterial circulation of the brain it produces loss of consciousness, at times convulsions, hemiplegia and other signs of cerebral embolism. In the induction of artificial pneumothorax it has been learned that no air should be injected into, or in the region of, the thoracic cavity unless the manometer clearly indicates by registering a negative pressure that the point of the needle is in the pleural space. In dealing with fluid it is sometimes useful to put a small bubble of air into the chest as a diagnostic measure. I think it is permissible to insert air by means of a blunt pointed trocar, if it is made certain at the time the air is put in that a free flow of fluid is coming out.

The same precautions should be taken if one attempts to put lipiodol through a needle into the chest. Lipiodol is usually put down the trachea. It has been recommended that lipiodol be put directly through the chest wall into a cavity within the lung. In my opinion this is a highly dangerous practice, for lipiodol would produce the same result seen here or perhaps even a more serious one, because it would not be absorbed in the blood stream.

The clinical evidence in this case points to a massive tumor in the pleural cavity, possibly originating in the lung. Lilienthal has described several similar cases as giant tumors of the pleura. I think this tumor is larger than any Lilienthal reported in his series. We did not obtain a positive pathologic diagnosis from the tissue removed at biopsy. At the second operation further exploration of the tumor was carried out and it was found to occupy the entire pleural cavity, with a broad base on the mediastinum and a very rich vascular supply. It was absolutely inoperable so far as surgical removal was concerned. If we had found evidence of malignancy at the time of the first biopsy of course we would not have gone on with the second exploration.

Dr. Frederick T. Lord: The physical signs over the left chest are common to a variety of disturbances—closed bronchus with consequent atelectasis, tumor, cyst, abscess and elevated diaphragm. These signs are consistent with an accumulation of pleural fluid only if the bronchus is closed.

Dr. J. H. Means: I saw this patient. The signs we thought were strongly suggestive of fluid, but the repeated negative taps seemed to suggest tumor more than anything else. Then just before this episode some fluid finally was obtained. We thought that it might be worth while to try once more for it and that perhaps if free fluid was obtained the introduction

of a small amount of air would be permissible. I think if one has a free flow of fluid it is permissible to put in air. I agree with Dr. Churchill that the episode here was in all probability a pulmonary air embolism. I wonder whether the symptoms were actually due to air lodging in cerebral vessels or whether they may have been due to a disturbance in the output of blood from the heart.

In this instance it should be emphasized that the treatment given was very effective. The injection of adrenalin apparently brought about rapid resuscitation so that the episode was successfully passed through. It may however have been cardiac rather than cerebral.

Dr. Mallory: I believe there is one other case in which we had rather localized cerebral signs, Dr. Churchill.

Dr. Churchill: Last winter there was a patient with chronic empyema in whom irrigations were being carried on by the nurse in charge. The boy collapsed with these symptoms—loss of consciousness, convulsions and cyanosis. For a space of twenty minutes he showed the paralytic signs and reflex disturbances of a distinct hemiplegia. Dr. Ayer examined him half an hour after the incident and could find no residual signs at that time. In the confusion and bustle attending such an alarming incident the transient localizing symptoms are apt to be overlooked even if they are present. Of course the heart may be embarrassed by air entering its chambers and death occurs as a result when air is admitted into the systemic veins in large quantity. A patient under such circumstances would show no localizing neurological signs or symptoms. The only diagnostic sign of air in the chambers of the heart is the so-called water wheel murmur over the precordium. The only treatment is to tap the heart and withdraw the air. It takes quite a bit more air by this route to cause death or alarming symptoms than it takes if air enters the left side of the heart through the pulmonary circuit and passes directly to the brain. I think a man can stand receiving 20 cubic centimeters of air into a systemic vein probably without incident, but not 20 cubic centimeters into the pulmonary vein whence it passes to the cerebral circulation.

Dr. Hampton: I think if we had an opportunity to see another case and could take a lateral view of the skull we might settle it.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Sarcoma of the lung.
Bronchopneumonia.

DR. MAURICE FREMONT-SMITH'S DIAGNOSIS

Malignant lymphoma of the left lung, Hodgkin's type, or
Cyst, echinococcus or other, of the left lung.

ANATOMIC DIAGNOSES

Fibrosarcoma of the left pleura.
Operative wound, left thoracotomy.
Complete atelectasis of the left lung; partial of the right lung.
Arteriosclerosis, moderate, aortic, coronary; slight, renal.
Cholelithiasis.
Rectal polyp.
Melanosis of the colon.

PATHOLOGIC DISCUSSION

Dr. Mallory: The autopsy did not tell us much more than we already knew except the size of the tumor. I doubt if even after the operation Dr. Churchill had a clear idea of quite how enormous it was. The mass completely filled the pleural cavity. The lung was totally collapsed except for that one little bit of aerated tissue at the apex that Dr. Hampton picked up by x-ray. The tumor appeared to arise from the mediastinal tissue rather than from the lung itself. It was very slightly adherent to the parietal pleura, but not markedly so.

Microscopically the tumor is composed of typical well differentiated fibroblasts arranged in places in whorls. It is fairly uniform in character except that here and there within the tumor are small cystic cavities. I think possibly it was one of those which was on one occasion tapped and from which a small amount of fluid was obtained. The tumor was growing slowly, and differences of opinion might easily arise as to whether it should be classified as a fibroma or a slowly growing fibrosarcoma of low malignancy, very late to metastasize. Of course with such a tremendously large attachment it was quite inoperable.

The entire pericardium lay to the right of the midline and the heart was not only displaced but rotated on its axis nearly 180°, so that the apex impulse might well have been seen close to the right nipple.

Perhaps it is worth emphasizing once again, since we have had some discussion on the point at other conferences, that although the liver and spleen are very easily palpable they were not at all enlarged. The liver weighed 1500 grams, the spleen 250 grams, both within normal limits. A palpable liver or spleen means nothing unless we know the height of the diaphragm. In this case the left side of the diaphragm was pushed down by the tumor to the eighth interspace as measured at the autopsy. On the right side it was at the sixth interspace. Usually the right dome at the time of autopsy is at the fifth rib or even the fourth interspace. Of course those measurements at autopsy are relative. They do not represent the height at which the diaphragm stood during life because

there is more or less postmortem collapse of the lungs.

DR. CHURCHILL: Can you estimate the weight of that tumor?

DR. MALLORY: About 20 pounds. The primary origin I think quite certainly was the mediastinum. It is possible that the tumor is of nerve origin, that is, that it is a perineural fibroma, but we have not found anything sufficiently characteristic to make a positive diagnosis of that. The one other large mediastinal tumor which we have had recently was a ganglioneuroma. Practically speaking if the tumor in this case had been in a portion of the body where it was completely accessible it could certainly have been cured; there was no likelihood of metastases.

DR. HAMPTON: You could not make a neurofibroma out of that?

DR. MALLORY: It might be one, but I did not see anything that definitely proved it.

DR. HAMPTON: You agree with Roessler and his chief Kingbach that neurofibromas that arise posteriorly are most commonly tumors of the chest?

DR. MALLORY: I have not seen enough of those to know.

A PHYSICIAN: Was the right side of the heart hypertrophied or not?

DR. MALLORY: We did not weigh the heart. It is still attached to the specimen. It was however estimated as of normal size in both ventricles. It seems to be of the usual proportions. Could anything except a tumor displace a heart so far to the right as this? The heart is not only displaced but actually rotated so that the apex lay on the right and the apex impulse was seen and felt over in the nipple line on the right.

DR. MEANS: I am sure I have seen apices away over in the right nipple line with fluid or pneumothorax.

DR. MALLORY: To my mind the rotation seemed more striking than the displacement.

DR. MEANS: Does not the heart always rotate when it is pushed over to the right?

DR. MALLORY: I cannot remember having seen it at autopsy, but I have never seen massive unilateral pneumothorax at autopsy so far as I know.

DR. LORD: There is a colored photograph showing the position at autopsy of the displaced heart with a massive left pyopneumothorax in W. B. James' article on Pneumothorax in the first edition of Osler and McCrae's *Modern Medicine*. (Volume III, Plate VI, opposite page 875.) The mediastinum and all its contents are displaced towards the unaffected side. Contrary to the general impression, according to James, the heart is not swung from its point of attachment at the root of the great vessels, but is moved bodily across to the opposite side, its long axis continuing to maintain its normal relation with the long axis of the body. The visible and palpable cardiac impulse to the right of the sternum with left pneumothorax may in consequence be assumed to be due to the right auricle or the upper and anterior aspect of the right ventricle and not to the apex of the heart.

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UNJUST LEGISLATION

NEVER in the history of medicine have its practitioners as a body protested against reasonable demands for aid of individuals or organizations. Doctors in general have been ready to respond to every call without regard to personal safety or financial reward.

The time has come when the profession may with propriety throw off its proverbial complacency and unite in protection of its just rights.

A few facts which seem to warrant this action may be cited: Legislation provides that veterans of all the wars in which this country has participated may receive non-service disability allowance, free medical attention, free hospitalization, free traveling expenses to and from hospitals and for each day engaged in this travel, so long as the veteran did not pay a federal income tax the year before he applied for free medical service, and free hospitalization.

Up to March 31, 1932 811,492 claims had been filed for this veterans' disability allowance of which 392,759 have been allowed. The expenditure under this provision for twenty months amounted to $83,785,230. Indications are that by June, 1933 561,863 men will be receiving money from the federal treasury for injuries and illnesses which did not have any relation to war service. The average age of the 4,300,000 world war veterans now living is thirty-nine and many of these can qualify for at least twenty-five per cent disability under the present rating system. The rapidly growing increase of these payments will impose a staggering burden on the taxpayers of this country unless this law is repealed. Even though a veteran has enjoyed good health during the fourteen postwar years, if he becomes ill or injured he can have free medical and hospital care. Many veterans over forty years of age can, and as the younger men reach this age will, qualify for varying degrees of disability. This system of certification opens the way to graft and is a temptation to the weak-minded physician to accede to requests for unreasonable certification according to the opinion expressed by a committee of the New York Academy of Medicine. If the present provisions under the law persist, 100,000 additional hospital beds must be provided at a cost of $140,000,000 a year. The bed capacity of the veterans' hospitals in June, 1931 was 26,307, an increase of seven hospitals and 3,575 beds in that year. In March, 1931 Congress authorized the appropriation of $20,877,000 for more hospital construction and of the occupants of beds in veterans' hospitals fifty per cent are for non-service accidents or illnesses, and for last year seventy-six admissions were for non-service disability cases.

A feature of the law is that "an ex-service man who is shown to have or, if deceased, to have had prior to January 1, 1925 certain diseases such as spinal meningitis, tuberculosis or neuropsychiatric disorders", "developing a 10 per centum degree of disability or more—shall be presumed to have acquired his disability in service between April 6, 1917 and July 2, 1921". Other qualifying statements are all in favor of the applicant. Included in the sums spent annually for hospitalization and domiciliary care of veterans, are traveling expenses for examinations and other incidentals.

Free hospitalization was inaugurated in 1924, and in 1925 26,610 were under treatment. Last April the number had grown to 43,211 of which latter number nearly sixty-four per cent were cases with disabilities not connected with war service.

This large proportion of cases taken from the practice of physicians who are taxpayers and carrying their local responsibilities is intrenching state medicine in its competition with private practice. We have now over seven thousand hospitals in this country and it is estimated that less than seventy per cent of the beds are occupied. Even the simplest attention to econ-

omy would lead the government to contract for hospital services in the civilian hospitals and turn the distribution of payments for veterans' hospital care into the treasury of these hospitals and also toward the employment of civilian physicians.

No loyal citizen, doctor or layman, wishes to have complete federal care of those veterans whose diseases or injuries have relation to war service refused, but all other veterans should stand on an equal footing with the rest of the people.

The present law will elevate an imposing proportion of our people to a preferred class that will be relieved of the expenses of illness for which all taxpayers will have to pay. It will destroy that spirit of independence which is desirable. It will be State Medicine on a gigantic scale. It will take millions of dollars from the civilian medical practitioners if continued.

The medical profession may with propriety unite in a protest to Congress and request the repeal of laws relating to this situation. Every state medical society can exert influence through appropriate resolutions. If no action is taken, there will be no justification for later protests.

RAW VERSUS HEATED MILK

THE United States Public Health Report for September 23, 1932, contains the results of an interesting study on the relative growth-promoting properties of raw and heated milk. It is well known that for years the advocates of raw milk have strongly contended that heating seriously impairs the nutritive value of milk. These claims have been made partly on clinical impression and partly on rat experiments. In an attempt to arrive at some satisfactory conclusion as to the relative merits of the two cases, the Office of Milk Investigation of the Public Health Service, with the coöperation of State Departments of Health, conducted a survey of two large groups of children; age-weight curves were plotted for 3,558 children and age-height curves for 3,319 children of two to six years of age. The summary and conclusion seem to settle conclusively the question as to whether heated milk is deficient in growth-promoting properties.

SUMMARY

"(1) There is no significant difference between the average weight of children who have received no milk except heated milk, and the average weight of children who have received raw milk for more than the latter half of their lives, the respective weights being 33.6 and 33.2 pounds, the insignificant difference being in favor of the children receiving heated milk.

"(2) There is no significant difference between the average height of children who have received raw milk for more than the latter half of their lives, the respective heights being 37.5 and 37.4 inches, the insignificant difference being in favor of the children receiving heated milk.

"(3) There was no significant difference between the two groups of children from the standpoint of the relative percentage of life during which various supplementary foods were included in the diet, except in the case of cod liver oil, which was included during an average of 41.6 per cent of the lives of the children receiving heated milk, and an average of only 27.6 per cent of the lives of the children receiving raw milk.

"(4) This difference in the percentage of life during which cod liver oil was fed did not, however, affect the relative positions of the two age-weight curves significantly, since the average weight of the 636 children in the heated-milk group who received no cod liver oil at all was 33.5 pounds, as compared with 33.8 pounds for the 794 children in the heated-milk group who received cod liver oil during more than half of their lives.

"(5) The parents of the children receiving predominantly raw milk reported a higher incidence of diphtheria, scarlet fever, intestinal disturbances, and rickets than did the parents of the children receiving heated milk only.

CONCLUSION

"The growth-promoting capacity of heated milk plus the supplementary diet received by the average American child of 10 months to 6 years is not measurably less than the growth-promoting capacity of raw milk plus the supplementary diet received by the average American child of 10 months to 6 years."

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

SWAN, CHANNING S. A.B., M.D. Harvard University Medical School 1923. F.A.C.S. Assistant Urologist, Massachusetts General Hospital. His subject is "(1) End Result of Conservative Surgery on a Lone Kidney. (2) Renal Tumor Simulating Renal Calculus." Page 815. Address: 264 Beacon Street, Boston.

BARNEY, J. DELLINGER. A.B., M.D. Harvard University Medical School 1904. F.A.C.S. Chief of Service, Urological Department, Massachusetts General Hospital. Assistant Professor of Genito-Urinary Surgery, Harvard Medical School. His subject is "A Study of Renal Infarction." Page 817. Address: 87 Marlborough Street, Boston.

GRAVES, ROGER C. A.B., M.D. Syracuse University Medical School 1918. F.A.C.S. Urol-

ogist to Carney Hospital. Genito-Urinary Surgeon to Pondville State Hospital. Consulting Urologist to Quincy City Hospital, Brockton Hospital and Winchester Hospital. Address: 12 Bay State Road, Boston. Associated with him is:

Solomon, Sidney J. M.D. Tufts College Medical School 1917. Visiting Physician, Malden Hospital. Address: 360 Main Street, Everett, Massachusetts. Their subject is "Perinephritic Abscess in Infants." Page 819.

Quinby, William C. M.D. Harvard University Medical School 1902. F.A.C.S. Clinical Professor of Genito-Urinary Surgery, Harvard Medical School. Urologist, Peter Bent Brigham Hospital. His subject is "Carcinoma of the Bladder Associated with the Formation of Mucus." Page 821. Address: Peter Bent Brigham Hospital, Boston.

Smith, George Gilbert. A.B., M.D. Harvard University Medical School 1908. F.A.C.S. Urologist, Massachusetts General Hospital and Palmer Memorial Hospital. Surgeon, Collis P. Huntington Memorial Hospital. His subject is "Bladder Reactions Following the Application of Radium to the Uterus." Page 822. Address: 6 Commonwealth Avenue, Boston.

Riley, Augustus. A.B., M.D. Harvard University Medical School 1907. F.A.C.S. Assistant Professor of Genito-Urinary Surgery, Harvard Medical School. Visiting Surgeon in Urology, Boston City Hospital. Urologist, Malden Hospital. Consultant in Genito-Urinary Surgery, Symmes Arlington Hospital. Consultant, Genito-Urinary Department, Boston Dispensary. His subject is "The Prostate and Seminal Vesicles as a Focus for Staphylococcus Septicemia." Page 825. Address: 868 Beacon Street, Boston.

Shapira, Albert A. B.S., M.D. Harvard University Medical School 1913. F.A.C.S. First Visiting Surgeon, Beth Israel Hospital. Instructor in Surgery, Tufts College Medical School. Address: 587 Beacon Street, Boston. Associated with him is

Starr, Arnold. M.D. Tufts College Medical School 1928. Resident Surgeon at Beth Israel Hospital. Assistant in Surgery, Tufts College Medical School. Address: Beth Israel Hospital, 330 Brookline Avenue, Boston. Their subject is "Massive Intraperitoneal Hemorrhage From Ruptured Subserous Veins on the Surface of Uterine Fibroids." Page 827.

Lund, Charles C. A.B., M.D. Harvard University Medical School 1920. F.A.C.S. Assistant Visiting Surgeon, Boston City Hospital. Surgeon, Collis P. Huntington Memorial Hospital. Visiting Surgeon, Long Island Hospital. Instructor in Surgery, Harvard Medical School. His subject is "A Simple Method of Administering Approximately Accurate Mixtures of Oxygen and Carbon Dioxide." Page 829. Address: 319 Longwood Avenue, Boston.

King, Richard B. A.B., M.D. Harvard University Medical School 1925. Assistant in Medicine, Massachusetts General Hospital and Harvard Medical School. His subject is "A Tuberculin Test of Value in Adults." Page 831. Address: 311 Beacon Street, Boston.

A TRIBUTE TO THE MEMORY OF MISS PERSIS G. ANDERSON

By the untimely death of Miss Persis Greely Anderson, on November first, the result of a fall from her horse while riding in the Middlesex Fellsway, the Boston Medical Library suffers a great loss.

When she made application for a position in the library in 1920, at the age of eighteen, she was a wholesome-looking, unusually pleasant person who made a decidedly favorable impression on the committee. From the first, she showed ability, cheerfulness and industry. In addition, she had a keen sense of humor, which served to make her relations with the other members of the staff uncommonly agreeable. As time went on, she proved herself so valuable that she was entrusted with difficult tasks such as only a person of her sunny, tactful nature should undertake.

She was a capable writer, especially of short poems, many of which appeared in the papers and magazines, and at her funeral several of them were read by the clergyman who conducted the services.

Hers was a unique personality and the place which she filled so perfectly must remain vacant.

John W. Farlow.

MISCELLANY

FIFTY YEARS OF MEDICAL PRACTICE

On the evening of October 26, 1932, about twenty-five medical friends of Dr. Roscoe W. Swan gathered at the Summit House, Mount Wachusett, Princeton, to pay him homage. The occasion was that of the completion, on October 10, 1932, of fifty years of honorable medical practice in Worcester; continuously except for time spent in postgraduate work in America and abroad, in Vienna, Berlin, London, Edinburgh, Dublin, etc.

After dinner, Dr. Swan was presented a loving cup. He responded to the presentation and gave interesting and humorous reminiscences of his early days of practice. Dr. Swan has long enjoyed frequent trips to Mount Wachusett for rest and admiration of the panorama of beauty so characteristic of that elevation. It was for this reason the Summit House was selected for the event. Although the hotel had been closed for the season, it was reopened by Proprietor Hawkes for the evening.

THE MASSACHUSETTS EYE AND EAR INFIRMARY

A Radio Broadcast* by Frederic A. Washburn, M.D.†

The Massachusetts Eye and Ear Infirmary for more than a century has served all New England. To this institution and to its Staff all turn when it is necessary to be hospitalized for injury to or disease affecting the eyes, the ears or the throat and the nose.

Until the early part of the nineteenth century diseases of the eyes, ears, throat and nose were treated by the surgeon or physician in general practice. No one received special training in these subjects. In those days the general hospital surgeon might turn from the amputation of a leg or an arm to the removal of a foreign body from the eye or to the setting of a broken nose. A little over one hundred years ago the thoughts of certain physicians were turning to the more careful study of the eye and its pathology and surgery. They found little encouragement in the conservative general hospitals—these were unwilling to set aside beds for special diseases. The result was inevitable that separate special hospitals were established, which cared first for the eye, then the ear and later the throat and nose.

The earliest of these hospitals were in Vienna and London, then one in New York followed by our own Infirmary here in Boston. The Massachusetts Eye and Ear Infirmary is, then, the second oldest institution of its kind in the United States. It is also the second oldest hospital in New England antedated only by the Massachusetts General Hospital. Its founding was due to the great interest in the surgery of the eye, developed by two Boston surgeons, Edward Reynolds and John Jeffries. Reynolds was a member of the Boston family of physicians of that name whose distinguished services to medicine continue in our own day. Jeffries was the second in line of even an older Boston medical dynasty. His father, the Dr. Jeffries of Revolutionary days, had a picturesque career. He was a contemporary and friend of Dr. Joseph Warren, the patriot. His conception of his duty was the exact opposite of that of Dr. Warren. While the British forces held Boston, Warren met Jeffries secretly and tried to persuade him to join in the rebellion. Jeffries was firm in his loyalty to Great Britain and King George. When the great exodus of the sons and daughters of Boston and Massachusetts took place in 1776, at the time of General Howe's evacuation of our city, Jeffries accompanied them to Halifax. He was rewarded for his loyalty by a commission as Surgeon General to His Majesty's forces in America. He took part in the campaigns in the Southern States. Jeffries was later one of the two in the balloon trip which marks the first aerial crossing of the English Channel by man. The son of the founder of the Infirmary, B. Joy Jeffries, was a distinguished oculist practicing in Boston until recent years. He did advanced work for his day in the subject of color blindness.

Reynolds and Jeffries in 1824 started a clinic for ambulatory patients in Scollay's Building, which then stood where is now the centre of Scollay Square. To this room all poor people suffering from diseases of the eye were invited for gratuitous treatment—886 people were so treated in the first sixteen months.

They thus demonstrated the need. They then laid the matter before public-spirited citizens of Boston. In 1827 the institution was formally incorporated as the Massachusetts Charitable Eye and Ear Infirmary. Its incorporators, its first Board of Managers and their successors have been chosen from Boston's leading citizens. They have been generous of their time and their money to make the Infirmary a success and the great institution of today is a monument to their efforts. The Staff has been and is composed of distinguished men. Reynolds, Jeffries, father and son, the Derbys of two generations, Bethune, Wadsworth, Standish, Blake, Greene, Crockett, and many others have passed on. The present Staff is able and has among its members men of far more than local reputation.

The Infirmary was without beds for patients until it was located in the Gore mansion on Green Street off Bowdoin Square in 1839. In 1850 a building was erected for the Infirmary on Charles Street, south of Cambridge. This was occupied until 1900 when the present building was erected.

The Infirmary has taken a prominent part in the teaching of medicine since its foundation. It is a strong ally of the Harvard Medical School. It trains graduate nurses and pupils of affiliated schools in the nursing of its own specialties. It devotes thought and money to research in the diseases of the eye, ear, nose and throat to the end that it may contribute to human knowledge and thus lessen human misery.

For the study of the eye and its diseases the late Dr. Lucien Howe gave a large sum of money to the Harvard Medical School to found the Howe Ophthalmological Laboratory now located in the Infirmary building.

Education and research are important but they are secondary to the care of the patient. The skillful, kind, thoughtful care of the patient, the devotion of every effort to alleviate or cure his disease is the main object of a hospital and that we try to keep ever before our doctors and nurses.

Many things are done for the comfort and happiness of the patients when they are inmates of the Infirmary. There is a library for patients, well provided with books both light and serious in character. There are ear pieces at each bed with which patients may take their choice of two radio programs. As there is no loud speaker this does not annoy others who may wish to be quiet or sleep. Members of the Board of Visiting Ladies and other volunteers read aloud to the many patients who are unable to use their eyes.

*July 24, 1932.
†Director, Massachusetts Eye and Ear Infirmary.

An occupational therapist is in the employ of the Infirmary. To the eye patients, training is given to develop the latent sense of touch by means of handicrafts graded to the needs of the previously skilled artisan or the unskilled laborer, as the case may be. If the prognosis for sight is poor the work is more intensively designed to prepare him to face the world when he leaves the hospital without that desolate sense of helplessness and dependence which accompanies an able-bodied man sentenced to complete or partial blindness.

Basketry has been a most successful medium for the training of the touch sense. There are many attractive articles which can easily be made in a short time entirely by the patient if he is wisely guided and encouraged by the therapist. By means of contrasting materials and sizes of reed his fingers quickly learn to distinguish between the spokes and the weavers—this gives him confidence in his ability to do something for himself and a degree of the peace of mind which is one of the greatest factors in his ultimate recovery.

Other successful crafts have been chair seating with cane or rush, and woolly animals wound on cardboard forms.

For the temporary cases of eye trouble occupational therapy is used variously:

1. To help overcome photophobia or fear of light in certain cases where it is valuable for the patient to get accustomed to the light. Bright contrasting colors of raffia are successful here to stimulate the patient's interests and enable him to realize that he can see something.
2. To direct the surplus energy of those who must remain in bed with eyes bandaged after operation so they will not be restless, but will lie quietly and allow the eye to heal.
3. To keep the patient carefully occupied when he is up and around so that he will not be tempted to read, or be irked by the confinement of the ward.

The Social Service workers are an important part of the armament with which the Infirmary combats disease and misery. Patients are referred to them for investigation as to the facilities available to produce the assistance needed by the individual. The worker helps the patient to get in touch with his church, his friendly society, the district nurse, the Public Health Department or Public Welfare Department of his community, or in some cases the convalescent home or chronic hospital needed.

Children whose vision prevents them from attending regular schools are referred to the social worker for placement in special sight conservation classes or to the Perkins Institution for the Blind. Adults whose vision is below normal and who in consequence are unable to pursue their ordinary employment, are referred to the Massachusetts Division of the Blind for industrial adjustment.

The social worker in the ear, nose and throat clinics is particularly active in children's work. In 1931 about 500 children were given hearing tests in the ear clinic. One-half showed a loss of hearing over 15%. This is serious and must be considered by the school authorities. Children afflicted with chronic discharging ears are followed to prevent serious complications such as mastoiditis and deafness in later life. Children who are permanently deaf are admitted to the State schools for the deaf. Last year 14 such children were referred to State schools. Over 300 adults were sent to the Speech Readers Guild for lip reading and hearing appliances. Patients with carcinoma and tuberculosis of the throat are major problems and frequently it is necessary to arrange sanatorium care for them.

The Massachusetts Eye and Ear Infirmary is adjacent to the Massachusetts General Hospital. Its Out-Patient Department is run in common with that institution and its patients have advantage of the services of the Staff of the General Hospital, when needed. The same individual is the Director of both institutions. Thus the Infirmary has the advantage for its patients of a close affiliation with a great general hospital without relinquishing the many advantages of its independence.

In 1931 the Infirmary treated in its beds 7,668 patients. Of these, 1,679 were private patients who paid their way in full. Of the remaining 5,989, 1,083 were admitted free and the rest paid less than cost, some of them very much less. In the Out-Patient Department there were 91,566 visits of patients.

All this costs money. The Infirmary receives absolutely no contribution from City or State. The only help which is given is its exemption from taxation as a charitable institution. The only sources of income are its receipts from patients and income from endowment. Every economy not inconsistent with the well-being of the patient is practised. Salaries and wages of all on the Infirmary payroll have been cut. But nothing has been done to lessen the service to patients. These are anxious days for the voluntary hospitals. Income from endowment is less, patients' savings are diminishing. This is no time to lessen our charity. Boston and Massachusetts always have supported the Massachusetts Eye and Ear Infirmary. We have faith to believe they will continue to do so.

FINE OPENING FOR A COUNTRY PRACTITIONER

The doctor who formerly practiced at Northwood Center, New Hampshire, has recently died. This is a town of about 900 inhabitants with surrounding territory including about 5,000 more. Letters addressed to Rev. A. Herbert Armes, Northwood Center, New Hampshire, will be answered.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1931 AND SEVEN YEAR AVERAGE

MONTH ENDING OCTOBER 15, 1932

Diseases	1932					1931			
	Week ending Sept. 24	Week ending Oct. 1	Week ending Oct. 8	Week ending Oct. 15	Average cases reported for week corresponding to Oct. 15 for past seven years	Week ending Sept. 26	Week ending Oct. 3	Week ending Oct. 10	Week ending Oct. 17
Cerebrospinal Men.	—	—	—	—	1	2	—	1	1
Chicken Pox	5	5	27	33	28	4	2	—	5
Conjunctivitis Inf.	—	—	—	—	—	—	1	1	—
Diphtheria	3	5	5	2	25	3	2	6	5
Dysentery Amoebic	—	1	—	—	—	—	—	—	—
Dysentery Bacillary	2	—	—	—	—	—	—	—	1
Encephalitis Epid.	—	—	1	—	—	—	—	—	—
German Measles	—	—	—	—	2	1	2	4	—
Hookworm Infection	—	—	—	1	—	—	—	—	—
Influenza	3	—	5	2	3	—	3	1	2
Malaria	1	—	—	—	—	—	—	—	—
Measles	4	2	5	4	15	5	2	11	1
Mumps	4	13	9	23	7	6	17	8	10
Paratyphoid Fever	—	—	—	—	—	1	—	—	2
Pneumonia (Broncho)	15	13	23	22	15	18	7	14	8
Pneumonia (Lobar)	15	11	16	19	16	11	8	14	16
Poliomyelitis	—	1	—	1	15	81	64	45	26
Scarlet Fever	20	18	38	27	18	2	11	9	14
Septic Sore Throat	—	—	1	1	3	1	1	2	—
Tetanus	1	—	—	—	—	—	—	1	—
Trachoma	—	—	—	—	—	—	—	1	—
Trichinosis	—	—	—	—	—	1	—	—	—
Tuberculosis (Pul.)	20	12	26	21	23	12	23	26	23
Tuberculosis (O. F.)	5	1	2	2	—	1	1	1	1
Typhoid Fever	5	8	3	2	5	5	4	5	2
Typhus Fever	—	—	—	1	—	—	—	—	—
Whooping Cough	35	41	17	34	32	54	67	28	22
Gonorrhea	31	28	41	20	41	77	35	23	32
Syphilis	35	36	50	35	34	51	56	44	22

Remarks: No cases of Asiatic cholera, glanders, plague, or yellow fever during the past seven years.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR SEPTEMBER, 1932

Anterior poliomyelitis is extremely low this month, a lower figure having been reported only once since this disease became reportable.

Diphtheria continues to strike new low figures, the number of cases reported in September being only half of the lowest number ever reported before.

Typhoid fever also continues to decrease in prevalence, a lower figure for the month having been reported only once before.

Pulmonary and other forms of tuberculosis still continue their downward trend.

There has been no increased reporting of influenza so far this season.

Whooping cough, lobar pneumonia and measles are slightly below the usual number reported for this season of the year.

Scarlet fever and mumps are a little more prevalent than normal.

Chicken pox, German measles and epidemic cerebrospinal meningitis occurred about the number of times expected.

RARE DISEASES

Anterior poliomyelitis was reported from Boston, 1; Fitchburg, 1; Gloucester, 1; Hampden, 1; Lexington, 1; Malden, 2; Natick, 1; Quincy, 1; Springfield, 1; Uxbridge, 1; Weymouth, 1; Total, 12.

Dysentery was reported from Cambridge, 1; Haverhill, 1; Reading, 1; Wilmington, 1; Total, 4.

Encephalitis lethargica was reported from Cambridge, 1; Northampton, 1; Total, 2.

Epidemic cerebrospinal meningitis was reported from Boston, 3; Cambridge, 1; Hadley, 1; Milford, 1; Newton, 1; Total, 7.

Malaria was reported from Athol, 1.

Pellagra was reported from Haverhill, 1.

Septic sore throat was reported from Boston, 4; Dartmouth, 1; Fall River, 2; Lowell, 1; New Bedford, 1; Total, 9.

Tetanus was reported from Lynn, 1; Oak Bluffs, 1; Total, 2.

Trachoma was reported from Boston, 1; Quincy, 1; Total, 2.

Trichinosis was reported from Boston, 1.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

	Cases in Entire Pop.				Case Rates per 100,000 Pop.		
	Sept. 1932	Sept. 1931	Proso. Index*	Epi. Index†	Sept. 1932	Sept. 1931	Expected Rates‡
All Causes	3061	4329	—	—	71.2	101.2	—
Ant. Polio.	12	588	131	.1	.3	13.8	3.0
Diphtheria	72	144	233	.3	1.7	3.4	5.4
Ep. C. S. Men.	7	7	6	1.2	.2	.2	.1
Measles	94	80	192	.5	2.2	1.9	4.5
Pneumonia, Lobar	67	104	99	.7	1.6	2.4	2.3
Scarlet Fever	364	355	319	1.1	8.5	8.3	7.4
Tuberculosis, Pulmonary	297	320	330	.9	6.9	7.5	7.7
Typhoid Fever	31	25	41	.8	.7	.6	1.0
Whooping Cough	304	546	622	.5	7.1	12.8	14.5
Chicken Pox	82	63	—	—	1.9	1.5	—
German Measles	34	30	—	—	.8	.7	—
Gonorrhea	587	622	—	—	13.7	14.5	—
Influenza	6	22	—	—	.1	.5	—
Mumps	111	121	—	—	2.6	2.8	—
Syphilis	369	341	—	—	8.6	8.0	—
Tuberculosis, Other Forms	37	54	—	—	.9	1.3	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus 2.0 would indicate twice the expected number, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal.*

‡Calculated from the Prosodemic Index.

DR. F. N. ALLAN IS ASSOCIATED WITH THE LAHEY CLINIC

Dr. Frank N. Allan joined the staff of the Lahey Clinic on November 1, in the department of general medicine. Dr. Allan has been associated with the Division of Medicine of the Mayo Clinic for the past seven years.

CORRESPONDENCE

EPICONDYLITIS IN JAVELIN THROWERS

Mr. Editor:

The fact that this condition may be a result of the above-mentioned sport was brought to my attention this summer.

On July 24 I saw Miss J. S. 19 years of age, who gave a history of participating in this sport for some time during the last spring. She gave no history of any previous trouble with the elbow, though she had engaged in many other forms of athletic exercise.

There was a typical history of pain, localized about the external condyle which was accentuated by exercise, and such motions as putting on a coat or reaching for a book. The typical tender point over the epicondyle was present.

I have been informed by a layman, interested in field sports, that symptoms which we now know to be due to epicondylitis are quite common in javelin throwers. Also that the Finns, who are masters at this sport, suffer less from this trouble than the Americans, on account of their motions in throwing the javelin. This brings the shoulder muscles into play in the "heave," while the Americans use a motion which brings the forearm more into play, in somewhat the same position which causes the trouble in tennis players.

Yours truly,

WM. PEARCE COUES, M.D.

October 27, 1932.

CHILLS IN A CASE OF UNRUPTURED APPENDIX

October 23, 1932.

Editor, The *New England Journal of Medicine,*

In one of the Cabot Case Records published in the *Journal* of February 19, 1931, the rarity of chills in

the case of non-ruptured appendicitis was discussed. I have recently seen one such case.

The patient was a young woman of 22, previously in good health except for constipation and dysmenorrhea. When seen at noon she gave a history of abdominal pain and nausea during the previous night, which she attributed to an approaching menstrual period, although the symptoms were rather more severe than usual for her. The pain had continued, neither more nor less severe, localized at and below the umbilicus, steady rather than crampy, moderate in degree. Nausea was still present, but the patient had not vomited. Palpation of the abdomen showed tenderness only at McBurney's point. Temperature normal. All diagnoses except appendicitis were ruled out. Appendectomy was advised, but refused.

At five o'clock she was again visited, and was found to be in the midst of a chill. Local signs were unchanged, except that there was a suggestion of spasm of the right rectus. Temperature 100°. It was thought that the appendix had abscessed but had not ruptured. Therefore she was cautiously removed to a hospital for immediate operation. Upon arrival she had two more chills of great severity. The operation, performed two hours after the first chill, showed an abscessed appendix, unruptured. There was no other pathology. Convalescence was normal.

Very truly yours,

FLORENCE L. MEREDITH, M.D.

466 Commonwealth Avenue,
Boston, Mass.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.,
September 24, 1932.

Managing Editor,
The *New England Journal of Medicine,*

In addition to the articles enumerated in our letter of August 26 the following have been accepted:

Abbott Laboratories
- Abbott's A-B-D Malt Extract with Cod Liver Oil and Viosterol 5D

Jensen-Salsbery Laboratories, Inc.
- Undulant Fever Bacterial Vaccine

Eli Lilly & Co.
- Gas-Gangrene Antitoxin (Combined)
- Tetanus-Gas-Gangrene Antitoxin (Combined)
- Plague Vaccine, Prophylactic, three 1 cc. vials package

National Drug Co.
- Tuberculin Intracutaneous for Mantoux Test

G. D. Searle & Co.
- Tablets Chiniofon-Searle Enteric Coated, 0.25 Gm. (4 grains)

E. R. Squibb & Sons
- Typhoid Vaccine (Immunizing), one 5 cc. vial package
- Typhoid Vaccine (Immunizing), one 20 cc. vial package

Ulmer Laboratories
- Biliposol
  - Ampoules Biliposol Solution, 2 cc.

The following articles have been included with the List of Articles and Brands Accepted by the Council But Not Described in N. N. R. (New and Nonofficial Remedies, 1932, p. 487):

Hollister-Stier Laboratories
- Protein Extracts Diagnostic-Hollister-Stier

McCormick & Co., Inc.
- McCormick's English Mustard

United States Standard Products Company
- Vaccine Virus (U.S.S.P.)

The Wilber Co., Inc.
- Tablets Digitalis-Wilber
- Tincture Digitalis-Wilber

John Wyeth & Brother, Inc.
- Wyeth's Capsules Digitalis Leaf Defatted

Yours very truly,

PAUL NICHOLAS LEECH, *Acting Secretary,*
Council on Pharmacy and Chemistry.

THE TREATMENT OF HAY FEVER

October 4, 1932.

Editorial Department,
The *New England Journal of Medicine,*
8 The Fenway, Boston.

Dear Sirs:

I have just read, in the *Journal* of September 29, your editorial comment about a new glass wool air filter which provides relief for hay fever sufferers.

Unfortunately, many of these patients can not afford air filters, nor are they able to remain always in an air-filtered room.

Recently, at Vanderbilt Clinic in New York, there has been a special hay fever clinic in which local treatment to the nasal mucous membrane has been given by means of high frequency electricity, using a non-vacuum electrode followed by ultra violet light, using a cold quartz applicator. General body radiation with the ultraviolet was also given.

The object of this method of treatment was to produce a hyperemia of the nasal mucosa and follow this by the ultraviolet light which was thought to produce a bacteriacidal effect.

A thorough nasal examination with x-ray studies of the sinuses was made in each patient. A high percentage of nasal sinus infection was found.

About forty patients continued regular treatments three times a week, the time required for each treatment being about fifteen minutes. In all the patients, with a true allergic rhinitis, there was marked relief of symptoms.

After the second and third treatments, there was lessening of itching of eyes, nose and palate. After the fourth to the sixth, nasal discharge and occlusion lessened. Sleep became less disturbed and in about 15% of patients there were so few symptoms, that

they were told to return only in case of a recurrence.

No patient received more than thirteen treatments. One who used an air-filter continued its use.

There is no question about the value of this form of treatment and it seems desirable that it should be started several weeks before the hay fever time arrives with the expectation that the attacks be aborted.

The treatment is not new. Our method of application is a little different than any reported.

Yours truly,

GLADYS L. CARR, M.D.

A FINISH TO PLASTER WORK

October, 1932.

The *New England Journal of Medicine*,

About 20 years ago I accidentally discovered a simple way to put a nice white gloss finish on all plaster work.

The method is to apply the plaster of Paris cast in the usual way, smoothing out the crevices, etc., with plaster which is the consistency of thick cream; then while this is drying, powder freely with ordinary talcum powder and smooth out by rubbing with the hands. This gives a very smooth, white, glistening surface which is not crumbling all the time as usual plaster casts do. Wearing apparel can slide easily over this form of finish.

The strength of the plaster is not affected and it does not get soiled so easily because of the extremely smooth finish.

Very truly yours,

GEORGE J. BASSOW.

Athol, Mass.

THE *BULLETIN OF THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER*

October 13, 1932.

Editor,

The *New England Journal of Medicine*,

At its meeting of October 8, the Board of Directors of the American Society for the Control of Cancer took the following action:

"It was voted that the *Bulletin* of the Society be made its official organ and that the present relationship between the Society and the *American Journal of Cancer* be discontinued."

Very truly yours,

C. C. LITTLE, *Managing Director*.

OBITUARY

WILLIAM AUGUST PUCKNER

The Council on Pharmacy and Chemistry has unanimously adopted the following report of the Committee on Resolutions.

WILLIAM AUGUST PUCKNER

William August Puckner was born February 24, 1864, at New Holstein, Wisconsin. He died in the Presbyterian Hospital, Chicago, October 1, 1932. He had been in failing health for a long time and in the hospital some ten weeks.

The creation of the Council on Pharmacy and Chemistry was authorized by the Board of Trustees of the American Medical Association February 3, 1905; the first meeting of the newly created Council was held at Pittsburgh some ten days later. Professor Puckner, one of the original members, attended that meeting and was active in formulating the principles on which the Council has worked, as expressed in its official rules of procedure. One year later he became Secretary, a position of grave responsibility; he filled it well and faithfully for twenty-six years and seven months. Professor Puckner was well equipped for the position he had assumed. A graduate of the Chicago College of Pharmacy, now the Illinois School of Pharmacy, he later became Professor of Chemistry in that school. He took a course of chemistry at Harvard University and later studied at the University of Heidelberg. He received the honorary degrees of Doctor of Pharmacy, from the University of Pittsburgh, and Master of Pharmacy, from the Philadelphia School of Science. Dr. Puckner was an outstanding chemist and at the time of his appointment as Secretary of the Council he had already won for himself an enviable reputation in the field of alkaloidal chemistry. He was a charter member of the Chicago Section of the American Chemical Society and was elected chairman of that section in 1895. For some years Dr. Puckner was chief chemist for a pharmaceutical firm known as "Searle and Hereth" and this, added to his experience as professor in the school of pharmacy, gave him an intimate knowledge, from every angle, of the work he was undertaking. On accepting the secretaryship he, of course, gave up his connection with this firm. Dr. Puckner was endowed with an especially good memory which possibly became more acute when he developed blindness. If he were asked about a product that had been before the Council months or years before, without referring to the bulletin or any other records, it was seldom that he was unable to give in detail every action taken that led to its acceptance or rejection. Under his direction, the weekly bulletin—the medium by which the Council transacts its business—became a model of efficiency. Of much more importance in this Council work were his personality, his attributes, and his characteristics. While occasionally he had to meet, personally, representatives of firms submitting products, he preferred wherever possible the more deliberate practice of correspondence. In this he exhibited tact, patience, resourcefulness, qualities that were absolutely necessary for a successful solution of the many problems that were continually coming up. In all such cases Dr. Puckner was able to see and appreciate the point of view of the other side, the manufacturer. When his eyes began to fail and when he realized that the condition would inevitably result in blindness, Professor Puckner courageously pre-

pared himself to face the handicap. He investigated the practicability of Braille's system for the blind and the typewriter; both of these he used. He kept in touch with current medical and chemical literature, both English and foreign, especially German, by having matter read to him, and in the case of important articles, recorded on the dictaphone for review at home; for his determination to overcome this disability compelled him to work at night as well as day. To those who knew him at his daily work, Dr. Puckner seemed to have dedicated his life to that which seemed nearest to his heart—the success of the Council and its efforts to advance scientific therapeutics. With patience in adversity, with sincerity of purpose, with conscientious devotion, he carried on. His heart was in his work; his life devoted to the cause he served.

The Council, individually and collectively, wish to express their high regard and affection for Professor Puckner as a friend and co-worker and admiration for the way he carried on, for his executive ability, for his efficiency in spite of handicap, for his loyalty. In his death, the Council has lost a member of unique value: the medical profession, a servant who unobtrusively worked faithfully for a quarter of a century.

NOTICES

CLINICS IN MEDICINE AT PETER BENT BRIGHAM HOSPITAL

On Thursdays at 3:30 P. M. in the Amphitheatre of the Peter Bent Brigham Hospital Dr. Henry A. Christian, Hersey Professor of the Theory and Practice of Physic, Harvard, and Physician-in-Chief, Peter Bent Brigham Hospital, will give a series of clinics which members of the medical profession are cordially invited to attend. The next clinic will be given on November 17.

Physicians and medical students are also invited to attend ward rounds of the Medical Staff of the Peter Bent Brigham Hospital held from 10-12 o'clock on Saturdays, as well as a clinical-pathological demonstration immediately following these rounds.

CHANGE OF DUTY AND STATION OF COMMISSIONED OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE IN NEW ENGLAND

Senior Surgeon Lawrence Kolb has been directed to proceed from Washington, D. C., to various places and thence to Boston, Mass., via New York City, and to such points in Massachusetts, as may be necessary, including the State Hospital, Bridgewater, and Norfolk, Mass., and return, for the purpose of consulting with State officials concerning mental hygiene matters.

Assistant Surgeon General F. A. Carmelia has been directed to proceed from Washington, D. C., to Boston, Mass., and Bath, Maine, and return, for conference with the Medical Officer in Charge, with respect to quarantine matters.

RADIO HEALTH MESSAGES

NOVEMBER-DECEMBER, 1932

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZ. Tuesdays, 4:15 P.M.

November
15 The Health Examination
22 Only a Sore Throat
29 Anemia or the Lack of Blood

December
6 Sickness and Character
13 How Are You?
20 Chorea or St. Vitus' Dance
27 Hemorrhoids

STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays, 12:30 P.M.

Health Subjects of Public Interest discussed by the Division Directors of the Department.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 4:50 P.M.

Questions on Health and Prevention of Disease may be sent to: Radio Health Forum, State Department of Public Health, State House, Boston.

REPORTS AND NOTICES OF MEETINGS

THE ALPHA OMEGA ALPHA HONORARY FRATERNITY

At a recent meeting in Chicago, the directors of Alpha Omega Alpha Honorary Medical Scholarship Society adopted the following resolutions in recognition of the eminent services of the late Dr. William W. Root, Slaterville Springs, New York, the founder of the society and secretary-treasurer since its organization in 1902:

1. That all stationery and official documents of the society bear the words, "Founded by William W. Root, 1902.", and
2. That the annual lecture presented each year by a leading medical scientist, be known as the "William W. Root Alpha Omega Alpha Lecture."

The present officers of the society are Walter L. Bierring, Des Moines, president; Austin A. Hayden, Chicago, vice president; Josiah J. Moore, 55 East Washington Street, Chicago, secretary-treasurer. Mrs. Root will continue as assistant secretary.

In addition to the officers, the directorate includes Ray Lyman Wilbur, Washington, D. C.; Waller S. Leathers, Nashville; Louis B. Wilson, Rochester, Minn., and Willard C. Rappleye, New York City.

The committee on extension and policy comprises

Elias P. Lyon, Minneapolis, chairman; William Pepper, Philadelphia; Irving S. Cutter, Chicago; Frederick C. Waite, Cleveland, and Thomas C. Routley, Toronto.

REPORT OF THE EIGHTH INTERNATIONAL CONFERENCE AGAINST TUBERCULOSIS

Amsterdam, Holland,
September 10, 1932.

The Eighth Biennial Conference of the International Union Against Tuberculosis at The Hague was conducted September 6, 7, 8, and at Amsterdam, September 8 and 9, 1932. The opening meeting of this conference, the entertainments and the closing session all deserve special mention as well as the discussion of three very interesting and many-sided subjects.

On arrival at the Dierentuin, a large building with several halls in the middle of the Zoölogical Garden, the visitor presented his numbered identification card and found awaiting him in a large pigeonhole with the corresponding number, his badge with the same number, the program of the meetings, the invitations to functions and printed translations of the reports and co-reports on the three subjects selected for discussion as well as travel circulars, etc. The total registration was 743 and 33 countries were represented.

The dignified opening meeting was held at three o'clock Tuesday afternoon in the Knights Hall, a place of honor. On the raised dais at the side sat the officials of the Conference. In front of it was a table and two chairs reserved for the Queen Mother and the Prince Consort. Behind them were reservations for the Diplomatic Corps. At either end facing the center were chairs for members of the conference and other guests of the government and many were standing. A mixed chorus in the gallery sang delightfully three chorals by Palestrina and Valerius.

The chief speeches were by Dr. Nolen, president of the Conference, and by Mr. Ch. J. M. Ruys de Beerenbrouck, Minister of State, and President of the Council of Ministers.

Immediately after the meeting six busses in the courtyard of the Binnenhof were filled with members for a drive to the country estate of M. et Mde. van den Bergh who invited all to a Garden Party. The guests walked up a long drive through a forest of closely set tall beeches, thence through the house to a tent on the lawn where the host and hostess provided a generous and sumptuous entertainment. M. van den Bergh has been president of the Directors of a Tuberculosis Sanitarium in which the Queen Mother has been interested for many years and to which she has made large contributions.

At nine o'clock there was a reception in the Knights Hall with speeches, orchestral music and refreshments.

Wednesday morning some met at the Peace Palace, spent an hour exploring it and then were provided with a bus ride about The Hague. At five o'clock there were tram cars waiting to take members to the Kurhuis, a large hotel on the beach at Scheveningen for a tea given by the municipality. The Bürgermeister and his wife received the Prince Consort and other guests. During the refreshments there were speeches by Dr. Nolen, Dr. Leon Bernard, Secretary-General of the Union, and the Bürgermeister.

Thursday morning an excursion by tram to Delft to visit the Museum and the town was enjoyed. In the afternoon the conference had free transportation by special train to Amsterdam. That evening in the hall of the Colonial Institute the Bürgermeister of Amsterdam made an address of welcome. Then followed a film showing the development and completion of the project for converting a large area of the Zuider Zee into tillable land. The completion of the dam in May of this year was vividly portrayed.

Friday morning there was a trip to the cheese market to Alkmaar, and in the afternoon a canal boat trip about the city and harbor.

At five o'clock at the closing session of the conference the Secretary-General of the Union read his report covering the past two years and announced that the conference for 1934 would be held at Warsaw in Poland. Various speeches of thanks and congratulations followed.

Friday evening at Hotel Carlton a subscription dinner was the closing event of the conference.

The committee planned two excursions for Saturday to visit sanatoria, for Monday a trip to visit the new works on the Zuider Zee reclamation project, for Tuesday and Wednesday two-day excursions to more distant sanatoria and colonies. Many of the American delegates went to a clinical meeting in Hambourg specially arranged for them.

The organization and entertainment committees planned the entire program with care and intelligence. Especially did the committee of Dutch ladies do their utmost to make the visitors feel welcome. As one of them said, "We are glad to do it because we are giving our services."

"The Relation Between Allergy and Immunity" was the subject for a report and discussion on Wednesday. Professor Jules Bordet made the report in French and a printed translation in English was provided. After he had talked for half an hour several "Co-Rapporteurs" spoke for fifteen minutes each. Their reports were also printed beforehand. Then followed five-minute talks by various members who had signified in advance their desire to be heard, a few before luncheon and the remainder in the afternoon. M. Bordet closed the discussion. Summaries of most of these speeches were available for the press on multigraph sheets.

Bordet interpreted allergy as an acquired alteration of the tissues of an animal following an infection with living organisms.

If some of the same species of organism or its products be injected into the skin of an allergic ani-

mal there occurs a reaction or redness of the skin at the point of inoculation. If living organisms are injected, their spread to adjacent tissues may be delayed or prevented altogether by the reaction. In this sense the allergic state may be said to immunize or prevent reinfection from without.

The allergic condition of the tissues is not sufficient, however, to prevent organisms spreading from the original point of infection to other tissues within the body. To prevent this, other factors must be present to make a true immunity, which may ultimately produce complete healing or cure.

The typical allergic reaction under discussion is the injection of tuberculin into the skin of a subject with known or suspected tuberculous infection. If there is no infection there is no reaction and no damage to the animal or person. When used for diagnostic purposes it must be used in minimal doses.

Prof. S. Lyle Cummins of Cardiff reported that thousands of South African natives showed marked sensitiveness to tuberculin without any apparent infection while with a group of healthy workmen in Wales the percentage was much less (51.5%-4.2%).

Dr. Avid Wallgren of Gothenberg inoculated 148 pupil nurses parenterally with BCG. Eighty-eight became sensitive to tuberculin following the vaccination and 60 others continued to give a negative reaction to tuberculin. The first group after exposure to the contagion of tuberculosis yielded only one case of infection with tuberculosis (1.2%), while among the second group after a similar exposure there developed sixteen cases (26.7%).

All infants after inoculations with BCG were kept carefully isolated until they became sensitive to tuberculin. Only after this reaction became positive were they allowed to resume living with tuberculous persons. So far not one of 180 infants thus treated has become infected with clinically demonstrable tuberculosis as checked by continuing observation and radiographic examinations. This result is quite different from the morbidity and mortality from tuberculosis where infants have been allowed to return to infective conditions without their sensitiveness to tuberculin having been tested.

However, the degree of sensitiveness to tuberculin is no index of the progress or prognosis in the case of an infant already infected with tuberculosis. There is no proof that an individual with a negative reaction to tuberculin possesses an increased specific resistance to infection with this disease.

Dr. Wm. Charles White of Washington analyzed clearly the causes of confusion that have arisen since von Pirquet first used the word allergy. He mentioned briefly the progress made by using various chemical fractions of tubercle bacilli grown on a constant synthetic medium. He mentioned that one of the most important and useful tests is the ratio of monocytes and lymphocytes in the white blood count. If the monocytes are increased there is lowered resistance. If the lymphocytes are increased there is increased resistance.

Dr. Calmette opened the discussion followed by twenty-four others and then Professor Bordet spoke in conclusion. There were great varieties of opinion and different points of view expressed.

Dr. Calmette said that the United States, England and Denmark, where the tuberculosis death rate is diminishing rapidly, may some day have a large percentage of non-immunes and so a possible increase of cases. To offset this we might well consider the wider use of vaccination with BCG!

Prof. Ed. Maragliano, an old gentleman of Genoa, was one of the most striking figures. He believes that the tubercle bacilli are digested by the tissues to the form of specific amino-acids which have no toxic power. Antibodies he thinks are partly digested products of the bacilli which still have some toxic properties, and give rise to allergic reactions. From this point of view he thinks allergy is closely related to the process of immunity.

Dr. L. Sayé of Barcelona gave the opening report on "Gold Therapy in Tuberculosis." The printed translation of it in English covers seventy-five pages plus twenty-two plates of x-ray chest films.

There are more extensive and reliable data on the use of Sanocrysin—double thiosulphate of gold and sodium—than on the use of numerous other preparations containing gold, most of them containing sulphur also. In experimental tuberculosis sanocrysin is truly remarkably effective if injected five or more days after the injection of living bacilli. In human cases the effect of sanocrysin has been favorable in the hands of a great number of good clinicians. Others have not had such favorable results. There is evidently variation in susceptibility. Enough individuals show hypersusceptibility to the drug to make necessary the use of minimal initial doses. If there is no reaction from the first and second weekly doses, larger doses may be given.

Dr. Sayé reported personal observations on 342 hospital patients observed from 1 to 7 years, of which 61% are clinical cures and 92 dispensary patients with 53% clinical cures. Large doses may cause stomatitis, severe dermatitis and albuminuria. One English writer called attention to the complete loss of chlorides in the urine in cases of reaction to sanocrysin, a point that might well be investigated.

Dr. J. Burns Amberson, Jr., of New York reported twelve cases treated with sanocrysin in Detroit, together with twelve control cases. His conclusion that the use of sanocrysin as he used it was not justified, was severely criticized as being too sweeping for such a small number of cases and controls. One should learn by experience to select the type of case in which sanocrysin becomes a helpful adjuvant.

Dr. P. Ameuille, of Paris, thinks that the fear of accidents should not govern the dose but that larger doses should be given at first. He would never, however, exceed two grams per week. He has seen only one case of true nephritis in more than 2500 cases treated and that one recovered. Slight ac-

cidents have occurred in 55 per cent of their cases, but in only five per cent were they obliged to interrupt treatment and in scarcely two per thousand was there notable aggravation of the malady. Special sensitivity to gold is usually transitory and disappears on continuing the treatment. If a case is one that would recover without treatment, it will recover much more quickly with gold treatment. There has never yet been a sufficiently careful study of cases which have recovered without treatment to make comparative statistics useful.

Prof. F. Bocchetti of Rome is more conservative in his estimate of the value of the gold treatment. The proportion of clinical cures was only slightly greater in the 113 gold treated cases than in the 376 cases treated in the sanatorium without gold.

Dr. L. S. T. Burrell of London reports on treatment of 60 cases. "Beneficial results which usually follow sanocrysin treatment are:

"1. Diminution of the quantity of sputum.

"2. Disappearance of the tubercle bacilli from the sputum or lessening of their numbers.

"3. Stimulation of the formation of fibrous tissue.

"Of 28 chronic fibrocaseous cases, 19 improved, eight were unchanged and one became worse. In 15 tubercle bacilli disappeared from the sputum.

"The cases that have some resistance, as the fibrocaseous group, are those where sanocrysin is especially of value."

Dr. Burrell presented other indications for the use of sanocrysin, the complications and dosage. Sanocrysin should be considered not as a cure but as an aid to other forms of treatment, the chief of which is rest.

Dr. Knud Farber, professor of medicine at Copenhagen, cited the difficulties of determining the value of treatment by a particular drug, using comparative statistics. He quoted experiences in Denmark from several different points of view.

Disappearance of bacilli from sputum in 65.3% of 366 cases compared with 33.5% of 1250 ordinary sanatorium cases. From 1918 to 1922, of 1622 cases 37% were able to work for five years, and from 1925 to 1929, of 384 cases treated in the sanatorium with sanocrysin 54% were able to work for five years. Early cases did better than more advanced ones. Cases without reactions did better than those that had reactions. Small doses progressively increased at intervals of not less than a week usually brought about improvement without reactions or serious complications.

Gold salts injected intravenously disappear from the blood stream in a few minutes. The salts lodge for the most part in the kidneys, liver and spleen. Elimination begins immediately and in the space of three or four days about 25 per cent is expelled in the urine and feces. Elimination usually continues for several months; in one case it continued for two years. The total amount injected should not exceed six grams. The dose should be individualized for each patient, but may be increased progressively from 10 cg. to 60 cg.

Dr. Jaquerod of Leysin discusses the reasons for the divergence of opinion among those who have used sanocrysin as a means of treatment. The salt has a double action.

The salts of gold have no bactericidal action on the tuberculous lesions. Their toxic action has no curative or protective effect and should be avoided at all costs.

The "gold treatment" has a double action according to the dose employed. With small doses the effect localizes itself in the pulmonary tissues in the neighborhood of the lesions. The gold fixes itself in the tissues and produces a sort of barrage, by mechanical obstruction of the capillary and lymphatic channels, thus favoring the localization and the regression of recent and acute lesions.

With large doses, the treatment causes irritation of the tuberculous tissues, a dangerous effect in recent and acute lesions, but which can be utilized in the treatment of chronic fibrous and localized lesions of pulmonary tuberculosis.

Prof. R. Renci, of Lwow, reported for Poland. After extensive experimental and clinical trials he finds that sanocrysin is an auxiliary treatment to be used only in connection with other methods in suitable cases. Much more of the gold is deposited in the kidneys than in the lungs, liver, or spleen. The doses should be given intravenously early in the day. The patient should rest in bed for several hours on a diet poor in protein and fat. In 1927 one enthusiastic clinician reported 61 per cent favorable results, but Renci more recently finds in his own material only 37 per cent. Future studies may show reason for a more favorable opinion of this treatment.

Dr. G. Schroeder, of Schöneberg near Wildbad, gave his report in German but his abstract is printed in English. Sanocrysin and other gold salts have only an indirect chemo-therapeutic effect. They act through migratory cells of the Reticulo Endothelial System and also through other cells. The cells are tuned up, the natural resistance of the patient is raised, and becomes more effective in actively opposing the invading organisms. The inflamed connective tissue appears to definitely store gold, as also does the tuberculous granulation tissue. This is not a specific action as regards tuberculosis, since every inflammation reacts similarly with gold salts. Gold salt in oil given intramuscularly has many advantages but oversaturation is to be carefully avoided. "If the patients treated are improving in health, we have always seen improvement in the red corpuscle sedimentation rate, increase in allergy (as measured by a tuberculin skin reaction) and better results with the precipitin and complement deviation tests; the reverse only where gold was ill borne and there was no improvement." "Cases are especially suitable for gold therapy in which an intact and reactive R. E. S. is present. The reactivity of the individual should therefore be tested by Kaufman's method: he examined the cell contents of blisters produced artificially with can-

tharides, and drew therefrom conclusions as to the state of the R. E. S."

The nature of gold therapy has not yet been completely revealed. Much in it still remains to be investigated. It is only by stringent criticism, and the avoidance of purely speculative views, that we shall arrive at reliable conclusions in the matter.

Prof. J. Valtis, of Athens, had experience in the Clinic of Dr. Leon Bernard of Paris. He commends the persistence of Dr. Bernard in continuing the gold treatment when many others had found it of little value. He has applied the treatment to patients in his tuberculosis clinic at Athens. He gives the treatment to all cases that cannot have artificial pneumothorax or one of the modern surgical methods of treatment provided there is no contraindication. He does not give it to patients with tuberculous enteritis, hepatic insufficiency, nephritis or hemoptysis.

He never exceeds the dose of 0.50 gm. and continues until the patient has received a total of from 3 to 5 grams. He has had no serious accidents or complications. It is indispensable to begin with very small doses to test the gold-tolerance of the patients. Used with prudence, gold therapy is of great service in the treatment of pulmonary tuberculosis. Its use marks an important step in progress.

The most interesting of the many short papers presented as discussion was that by Dr. Mollgard who invented sanocrysin. He feels that, owing to the diversity of observations and results, there must be something wrong with the fundamental idea that Koch's bacillus is the sole cause of tuberculosis. So he has abandoned further search for a chemical cure for the disease and is now studying the non-acid fast forms of the tubercle bacillus produced by disassociation.

More than forty added their bit to the discussion.

Dr. A. S. Knopf said he had gone to Paris doubtful about the utility of the gold treatment. What he saw and heard at the clinics there made him take a favorable view of it. After hearing part of the various points of view presented he again became doubtful and would advise patients to keep their gold in their pockets until a scientific committee had investigated the method for as many years as necessary to give a more united opinion as to its usefulness.

Dr. Sayé closed the discussion which had been adjourned and continued Friday morning in Amsterdam in a room in the Colonial Institute separate from the hall where the discussion of the third question was held.

(To be continued)

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance), Tuesday evening, November 15, at 8:15 o'clock.

PROGRAM

Presentation of Cases.

Hyperparathyroidism. By J. C. Aub, M.D.

Surgical Experiences with Adenomas of the Parathyroids. By E. D. Churchill, M.D., and Oliver Cope, M.D.

JOHN HOMANS, M.D., *Secretary.*

GREATER BOSTON MEDICAL SOCIETY

A joint Meeting of the Greater Boston Medical Society and the Beth Israel Hospital will be held on Tuesday, November 15, 1932, at 8:15 P. M., at the Beth Israel Hospital.

PROGRAM

Industrial and Traumatic Surgery

1. From the standpoint of the surgeon, with particular reference to the hand. Dr. Torr Wagner Harmer.

2. From the standpoint of the attorney. Samuel B. Horovitz, Esq.

Discussion: Dr. Armin Klein, Dr. William E. Browne.

BERNARD I. GOLDBERG, M.D., *Secretary.*
483 Beacon Street, Boston, Mass.

NEW ENGLAND PHYSICAL THERAPY SOCIETY

The regular meeting of the New England Physical Therapy Society will be held in the Music Room of the Boston Square and Compass Club, 448 Beacon Street, Boston, Mass., at 8 P. M. on November 16, 1932.

Dr. George E. Percy is the Program Chairman for this meeting; the general topic is High Blood Pressure. The papers are as follows:

1. Angina Pectoris, George B. Carr, M.D.

2. Etiological Factors in Arteriosclerosis. John F. Valentine, M.D.

3. Pathological Changes in Arteriosclerosis. Wilson F. Phillips, M.D., Assistant Professor of Medicine, Boston University School of Medicine.

General Discussion.

Our President, Dr. Abbott, urges the members to bring in clinical cases and reports.

Council meeting at 6 P. M. Dinner at 6:30 P. M.

Please notify the Secretary if you plan to attend the dinner.

All members of the medical profession are invited to attend.

ARTHUR H. RING, *Secretary.*

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The regular clinico-pathological conference of the New England Hospital for Women and Children will be held at the hospital, Dimock Street, Roxbury, on Thursday, November 17, at 8 P. M., with the following program: Paraldehyde in Obstetrics; Avertin in General Surgery; Avertin in Nose and Throat Surgery; Clinical and Pathological Case Reports.

ALICE H. BIGELOW, M.D., *Secretary.*

THE NEISSERIAN MEDICAL SOCIETY OF MASSACHUSETTS

The Sixth Regular Meeting, and Second Annual Meeting, of the Neisserian Medical Society of Massachusetts, will be held in Sprague Hall, Boston Medical Library, 8 The Fenway, Boston, Thursday, November 17, 1932, at 8:15 P. M.

Address, The Purposes of Therapy. Illustrated by cases. By Edward L. Keyes, M.D., Professor of Urology, Cornell University Medical College.

The medical profession is invited to attend.

OSCAR F. COX, JR., M.D., *Secretary.*

THE NEW ENGLAND ROENTGEN RAY SOCIETY

The November meeting will be held at the Boston Medical Library, Boston, Mass., Friday, November 18, 1932, at 8:00 P. M.

SCIENTIFIC SESSION

"A Roentgen Clinic of Jaw Lesions." Kurt H. Thoma, D.M.D., Boston, Mass.

The usual dinner will be held at the Harvard Club.

C. W. BLACKETT, M.D., *President,*
T. R. HEALY, M.D., *Secretary.*

SOCIETY MEETINGS
CONGRESSES AND CONFERENCES

November 14 and December 12—Boston Orthopaedic Club. See page 812, issue of November 3.

November 15—Lecture on "The Care of the Patient." See page 808, issue of November 3.

November 15—South End Medical Club. See page 812, issue of November 3.

November 15—Harvard Medical Society. See page 861.

November 15—Greater Boston Medical Society. See page 861.

November 16—New England Physical Therapy Society. See page 861.

November 17—Clinics in Medicine at Peter Bent Brigham Hospital. See page 857.

November 17—The Neisserian Medical Society of Massachusetts. See notice above.

November 17—New England Hospital for Women and Children. See page 861.

November 18—New England Roentgen Ray Society. See notice above.

November 21—Boston Medical Library. Medical History Club. See page 723, issue of October 20; also see page 765, issue of October 27.

December 7—American Board of Obstetrics and Gynecology. Announcement of Coming Examinations. See notice on page 557, issue of September 22.

December 7—New England Heart Association. See notice on page 813, issue of November 3.

December 9 - May 12—William Harvey Society. See page 765, issue of October 27.

February 6-10—The American College of Physicians. See page 765, issue of October 27.

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

January 4—Wednesday, Semi-Annual Meeting. Program to be announced.

May 3—Wednesday, Annual Meeting. Program to be announced.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Tentative Program
1932-1933

Wednesday, December 7, 1932—Beverly Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Robert Greenough. Subject to be announced later.

Wednesday, January 4, 1933—Danvers State Hospital, Hathorne. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. George Kline. Subject to be announced later.

Wednesday, February 1, 1933—Council Meeting, Boston.

Wednesday, March 8, 1933—Lynn Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Soma Weiss, Boston City Hospital. Subject: Hypertension.

Wednesday, April 5, 1933—Essex Sanatorium, Middleton. Clinic 5 P. M. Dinner 7 P. M. Speaker and subject to be announced later.

Thursday, May 4, 1933—Censors' Meeting, Salem Hospital, 3:30 P. M.

Tuesday, May 9, 1933—Annual Meeting. Salem Country Club, Forest Street, Peabody. Golf in afternoon; greens fee $2.00. Dinner at 7 P. M. Speaker: Dr. Burgess Magrath. Subject to be announced later. Ladies invited.

R. E. STONE, M.D., Secretary.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The program of the Middlesex East District Medical Society for the coming year is as follows:

January 11 at Wakefield.

March 15 at Melrose.

May, at the Meadowbrook Club, Reading.

ALLAN R. CUNNINGHAM, Secretary.

NORFOLK DISTRICT MEDICAL SOCIETY

November 29—Norwood Hospital, Norwood, Mass. Time to be announced. Papers by the Norwood Hospital Staff.

January 31, 1933—Roxbury Masonic Temple, 8 P. M. Subject: "Stomach Surgery"—Motion pictures. Dr. William R. Morrison.

February 28, 1933—Time and place to be announced. "The Diagnosis and Treatment of Anemia," by Dr. William P. Murphy.

March 28, 1933—Time, place and subject to be announced. Speaker will be Dr. J. P. O'Hare.

May—Annual Meeting. Time, place and subject to be announced.

FRANK S. CRUICKSHANK, M.D., Secretary.
1695 Beacon Street, Brookline.

PLYMOUTH DISTRICT MEDICAL SOCIETY

November 17—At the Moore Hospital, Brockton.

SUFFOLK DISTRICT MEDICAL SOCIETY

Wednesdays at 8:15 P. M.

November 30, 1932—Clinical Program, Peter Bent Brigham Hospital.

January 25, 1933—General Meeting in association with the Boston Medical Library at the Boston Medical Library. Titles and speakers to be announced later.

March 29, 1933—Clinical Program, Massachusetts General Hospital.

April 26, 1933—Annual Meeting. Election of Officers. Scientific Program—Titles and speakers to be announced later.

The Medical Profession is cordially invited to attend all of these meetings.

WILLIAM H. ROBEY, M.D., President,
LELAND S. McKITTRICK, M.D., Secretary,
HILBERT F. DAY, M.D., Boston Medical Library.

WORCESTER DISTRICT MEDICAL SOCIETY

Schedule of meetings for 1932-1933:

Wednesday, December 14—Meeting at the Worcester Chamber of Commerce Auditorium. Paper by Dr. Joseph Meigs of Boston, entitled "Uterine Bleeding."

Wednesday, January 11—Dinner and meeting at the Worcester City Hospital. Paper by Dr. Morris Fishbein, Editor of the Journal of the American Medical Association.

Wednesday, February 8—Dinner and scientific meeting at the Worcester State Hospital. Program to be announced later.

Wednesday, March 8—Dinner and scientific program at the Memorial Hospital, Worcester. Program to be announced later.

Wednesday, April 12—Dinner and scientific meeting at the Rutland State Hospital. Scientific program to be announced later.

Wednesday, May 10—The Annual Meeting. Place and program to be announced later.

ERWIN C. MILLER, Secretary.